

ECOTOX

ECOTOXicology Database System

ECOTOX Code Appendix

Prepared for

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Duluth, Minnesota

By

Computer Sciences Corporation
Duluth, Minnesota 55804
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Appendix A. Carrier CAS Numbers

<u>Chemical Name</u>	<u>CAS #</u>
Acetate	71501
Acetic acid	64197
Acetone (2-Propanone)	67641
Acetonitrile	75058
Aerosol OT (Sodium salt)	577117
Agar	9002180
Arachis oil	8002037
Butyl dioxitol	112345
Benzene	71432
Cadmium Chloride	10108642
Cadmium Sulfate	10124364
Cod Liver Oil	8001692
Cottonseed Oil	8001294
Corn Oil	8001307
Cornstarch	9005258
Cyclosol 63	89072606
Diesel oil	68334305
1,4-Dioxane	123911
DMF, N,N-Dimethylformamide	68122
DMSO, Dimethyl Sulfoxide	67685
Emulphor	9004982
Ethanol (or Ethyl alcohol - absolute alcohol)	64175
Ether	60297
2-Ethoxyethanol	110805
Ethylene Glycol Monomethyl Ether (2-Methoxyethanol)	109864
Fish Oil	8016135
Fuel Oil	68476299
Gelatin	9000708
Gum acacia	9000015
Gum tragacanth	9000651
HCL, Hydrochloric Acid	7647010
Hexane (also, N-Hexane)	110543
HNO3, Nitric Acid (HNO3; H2SO4,R)-Purity Character (Sulphuric Acid,R)	7697372
Isopropanol (2-Propanol)	67630
Iron Sulfates	10124499
Lactose	63423
Methanol (Methyl alcohol) (CH3OH)	67561
Methoxyethanol (or 2-Methoxyethanol)	109864

Methylcellulose	9004675
Methylene Chloride	75092
Methyl ethyl ketone	78933
Mineral oil	8012951
NAHCO ₃ , Sodium Bicarbonate	144558
NAOH, Sodium Hydroxide	1310732
N,N-Dimethylformamide (or Dimethylformamide)	68122
Nitric Acid	7697372
Olive Oil	8001250
Peanut Oil	8002037
Pentane	109660
Petroleum ether	8030306
Polyethylene Glycol (2-Propanol)	25322683
Polysorbate 80 (Tween 80)	809005656
Potassium Hydroxide (KOH)	1310583
Propane (Propylene glycol)	57556
2-Propanol Isopropanol (or Isopropanol)-Isopropyl alcohol	67630
Propylene Glycol	57556
Safflower Oil	8001238
Saline	7647145
Salt	7647145
Sesame Seed Oil	8008740
Sodium Chloride (Salt, Saline)(Na Cl)	7647145
Sodium Sulfate	7757826
Soybean Oil	8001227
Starch	9005258
Sucrose	57501
Sulfuric Acid	7664939
Sunflower Oil	8001216
Tergitol NPX	9016459
Toluene (or Methylbenzene)	108883
Toxisol FLC	12738920
Trichloroacetic Acid	76039
Triethylene Glycol	112276
Trimethylene Glycol	504632
Trioctanoin	538238
Triton-X100	9002931
Tween 40	9005667
Tween 80 (Polysorbate 80)	9005656
Water	7732185
Vegetable oil	68956683

Velsicol	2307495
Xylene	1330207

Appendix B. Chemical Grade Codes

AASG	Atomic Absorbption Spectrometry Grade	MRG	Merck Reagent Grade
ACS	American Chemical Society Grade	ME	Monsanto Electrical Grade
AG	Agricultural Grade	NAF*	National Formulary Grade
AN	Analar Grade	NP	Normapur Grade
AL	Analysis Grade	NR	Not Reported
A*	Analytical Grade	OP	Optima
A or GU	Analytical or Guaranteed Grade	PAN	Pestanal Grade
A or R	Analytical or Reagent Grade	PST	Pesticide Grade
A or T	Technical or Analytical Grade	PRG	Pesticide Residue Grade
AN or R	Analar or Reagent Grade	PH	Pharmaceutical Grade
AR*	A.R. Grade	PRA*	Practical Grade
B	Biological Grade	PR	Production Grade
CT	Certified Grade	PG*	Pure Grade
CG	Chemical Grade	PFG	Purified Grade
CH	Chromatographic Grade	R*	Reagent Grade
CL	Clinical Grade	RFG	Reference Grade
C	Commercial Grade	RE	Research Grade
C or AN	Commercial or Analar Grade	RE or A	Research or Analytical Grade
DG	Distilled in Glass Grade	RS	Residue Grade
DS	Dry Standard Grade	SC	Scintillation Grade
EM	Eastman Grade	SO	Solvent Grade
EL	Electrophoresis Grade	SPC	Spectrochemical Grade
EX	Experimental Grade	S	Spectrophotometric Grade
EXT	Extra Grade	TA	Technical Acid Grade
F	Field Grade	T*	Technical Grade
FFL	Free flowing Grade	T or P	Technical or Purified Grade
FO	Formulated Grade	T or PU	Technical or Pure Grade
GR	GR Grade	TIS	Tissue Culture Grade
GU	Guaranteed Grade	ULV	ULV Grade
GUR	Guaranteed Reagent Grade	UP	Ultrapure Grade
HPLC*	High Performance Liquid Chromatography Grade	USP*	United States Pharmacopeia Grade
HG	Histological Grade	UV	Ultraviolet Grade
I	Industrial Grade	UVS	Uvasol Grade
L	Laboratory Grade		
MK	Merck Grade		

* Code as "A" for concentration type for organic chemicals for ACQUIRE

Appendix C. Chemical Formulation Codes

AE	Acid Equivalent	LD	Liquid
AI	Active Ingredient	LDCO	Liquid concentrate
ASG	Agricultural Suspension	MO	Miscible Oil
ARST	Analytical Reference Standard	N	Nanograde
AQ	Aqueous Solution	ND	Neutralized, Desensitized
AS	Aqueous Suspension	NF	Nonionized Form
AAPS	Atomic Absorption Primary Standard	NR	Not Reported
CP*	Chemically Pure	OC	Oil Concentrate
CRI	Chromatographically Impure	OD	Oil Dispersion
CRP	Chromatographically Pure	OS	Oil Soluble
C	Commercial	ODA	Organic Dispersal Agent
CO	Concentrate	PAR	Particulate
CR	Controlled Release	PEL	Pellet
CRY	Crystal	PO	Powder
DC	Detached Crystals	PRE	Prepared in Lab
DG	Dispersable Granule (also known as "dry flowable")	PS *	Primary Standard
DP	Dispersable Powder	PA	Pro Analsi Quality
D	Dust	PU	Pure, Purissium or Puris
EC	Emulsifiable Concentrate	PF *	Purified
EF	Emulsifiable Formulation	RC	Recrystallized
ES	Emulsifiable Solution, Agent	RST*	Reference Standard
EG	Emulsified Granular	RF	Registered Formulation
E	Emulsion	SRF	Slow Release Formulation
EN	Encapsulated	SD	Solid
FFO	Field Formulated	S	Solution
FCASS	Fisher Certified Atomic Absorption Standard	SC	Suspension concentrate
FK	Flake	SF	Sand Formulated
FF	Flowable Formulation	SO	Soluble Concentrate
FG	Finely Ground	SP	Soluble Powder
FO	Formulated	SPCO	Spray Concentrate
GCR	Gas Chromatograph Standard	SPL	Spray Liquid
GS	Gaseous	SPO	Spray Powder
G	Granule, Granular	ST	Standard
GU	Guaranteed	STD	Standard Solution for AA
HG	Heavy Granular	TC	Technical product
		UD	Unneutralized, Desensitized
		WMC	Water Miscible Concentrate
		WS	Water Soluble
		WSC	Water Soluble Concentrate
		WP	Wettable Powder
		WHO	World Health Organization
		W/W	Weight per weight

* Code as "A" for concentration type for organic chemicals for AQUIRE

Appendix D. Radiolabel Isotope Codes

Ag-110	Silver	Ni-59	Nickel
Am-241	Americium	Ni-63	Nickel
As-73	Arsenic	Np-235	Neptunium
As-74	Arsenic	NR	Not Reported
As-76	Arsenic	P-32	Phosphorus
Ba-133	Barium	Pb-210	Lead
Be-7	Beryllium	Pb-203	Lead
C-12	Carbon	Po-208	Polonium
C-13	Carbon	Po-210	Polonium
C-14	Carbon	Pu-239	Plutonium
Cd-109	Cadmium	Pu-237	Plutonium
Cd-113	Cadmium	Ra-226	Radium
Cd-115	Cadmium	Ru-106	Ruthenium
Ca-45	Calcium	S-35	Sulfur
Cl-36	Chlorine	Sb-125	Antimony
Cm-244	Curium	Se-75	Selenium
Co-60	Cobalt	Sn-113	Tin
Co-64	Cobalt	Sr-90	Strontium
Co-57	Cobalt	Sr-85	Strontium
Cr-51	Chromium	Tc-95	Techninium
Cs-137	Cesium	Tc-99	Technicium
Cs-134	Cesium	Te-128	Tellurium
Cu-64	Copper	Tl-115	Thallium
Cu-63	Copper	Th-232	Thorium
Cu-65	Copper	Th 238	Thorium
Eu-152	Europium	U-238	Uranium
F-18	Fluorine	U-232	Uranium
I-131	Iodine	U-235	Uranium
Fe-59	Iron	V-48	Vanadium
H-3	Hydrogen (Tritium)	V-49	Vanadium
Hg-197	Mercury	Yes	Unknown radiolabel
Hg-203	Mercury	Zn-65	Zinc
I-125	Iodine		
I-131	Iodine		
Mn-54	Manganese		
N-15	Nitrogen		

Appendix E. Organism Source Codes

Code	Definition
CBC	C aptive b reeding c olony
COM	C ommercial source
DOM	D omestic strain
GAM	G ame farm strain
GOV	G overnment agency source
LAB	L aboratory strain
MLT	M ultiple Sources
NR	N ot reported
WLD	W ild strain

Appendix F. Lifestage Codes (at beginning of exposure)**I. Organism lifestage codes**

Code	Definition
AD	Adult
AL	Alevin
BL	Blastula
CC	Cocoon
CO	Copepodid
CP	Copepodite
CS	Cleavage stage
CY	Cyst
EB	Eyed embryo
EG	Egg
EL	Elver
EM	Embryo
EY	Eyed stage
FI	Fingerling
FY	Fry
GA	Gastrula
GE	Gestation
GL	Glochidia
GM	Gamete
IG	Imago
IM	Immature
IN	Instar
IT	Intermolt

JV	Juvenile; fledgling, hatchling, weanling
LC	Lactational
LP	Larva-pupa
LR	Prolarvae
LV	Larvae
LO	Lobes
MA	Mature
ME	Megalopa
ML	Morula
MO	Molt
MX	Multiple
MY	Mysis
NB	New born
ND	Naiad
NE	Neonate
NH	New, newly, or recent hatch
NL	Neurala
NR	Not reported, unknown
NU	Nauplii
NY	Nymph
OO	Oocyte, ova
PA	Parr
PC	Pre-hatch
PD	Pre-molt
PE	Post emergence
PG	Post spawning
PI	Post molt

PJ	Pre-, sub-, semi- or near adult
PK	Post smolt
PN	Post nauplius
PO	Post hatch
PQ	Pre-larvae
PS	Pre smolt
PT	Protolarvae
PU	Pupa
PV	Post larvae
PW	Pre-spawning
PY	Post embryo
PZ	Protozoa
SA	Subadult
SC	Yolk-sac larvae, sac larvae
SF	Sac fry, yolk sac fry
SI	Sexually immature
SM	Sexually mature
SMT	Smolt
SO	Sporeling
SP	Sperm
SR	Spore
ST	Spat
SU	Swim-up
TA	Tadpole
UY	Underyearling
VI	Virgin
YA	Young adult

YE	Yearling
YO	Young
YY	Young of the year
ZO	Zoea
ZY	Zygote

II. Plant lifestage codes

Code	Definition
BS	Bud blast stage
EX	Exponential Growth Phase
FB	Mature, full-bloom stage (fruit trees)
FG	Female gametophyte
FO	Flower opening
GP	Lag growth phase
GS	Germinated seed
IB	Incipient bud
LG	Log growth phase
MD	Mature dormant
MG	Male gametophyte
MX	Multiple stages
MT	Mature, no specified stage
PB	Mature, post-bloom stage (fruit trees)
PH	Mature, pit-hardening stage (fruit trees)
RC	Rooted cuttings
RP	Mature reproductive
RST	Rootstock
SB	Shoot

Code	Definition
SE	Scape elongation
SD	Seed
SG	Mature, side-green stage (fruit trees)
SL	Seedling
SN	Sapling
SY	Stationary growth phase
TC	Tissue culture callus
TU	Tuber
VG	Mature vegetative

Appendix G. Soil Type Codes

Standard Artificial Soils:

OECD 1984 Organization for Economic Cooperation and Development 1984

OECD 1993 Organization for Economic Cooperation and Development 1993

EEC Council of European Communities

ISO 1994 International Standard Organization 1994

Standard Artificial Soil Characteristics		
Soil Type	Organic Matter	pH
OECD 1984	10 % peat	6.0
OECD 1993	10 % peat	6.0
EEC	10 % peat	6.0
ISO 1994	10 % peat	6.0

Appendix H. Test Location Codes

Code	Definition
FieldA	Field, Artificial - a simulated or artificial field study is conducted in “an artificially bounded system that is a simplification of a specific ecosystem”, e.g. aviaries, pens, enclosures, outdoor pots
FieldN	Field, Natural - a natural field study is one “in which both the test system [...] and exposure to the stressor are “naturally” derived”; e.g. sprayed agricultural field or orchard plots, field surveys.
FieldU	Field, Unable to determine whether natural or artificial setting
Lab	Laboratory indoor setting, including environmental chamber, greenhouse, lath house, garden frame or indoor pots
NR	Not Reported ; unable to determine whether laboratory or field

Appendix I. Valid Duration Units

Code	Definition
s	second
mi	minute
h	hour
d	day
wk	week
mo	month
yr	year
lf	lifetime; no associated numeric value
NR	time information not reported
alv	alevin
abs	until abscission
ac	age class
ant	until anthesis
b0.25	0.25 bloom stage
blm	bloom stage
brd	Brood or litter
bs	bud blast stage
bt	to boot stage
cfs	to commercial flower stage
clv	cleavage
crs	crab stage
cs	cell stage
dpe	days post-emergence
dd	degree days

Code	Definition
dh	degree hours
dph	days post hatch
dphv	days post harvest
dpf	days post fertilization
dpn	days post-natal
dpo	days post oviposition
dpr	days post-release
dpref	days pre-fertilization
dps	days post spawn
dpt	days pre-fertilization
dpu	days post-swim up
dpw	days post swimming
dbh	days pre-hatch
ea	to e aring or heading
eb	e arly b loom stage
ej	egg to juvenile
eslk	to e arly s ilk stage
el	nth e gg laid
em	to e mergence
epa	egg to pre-adult
eso	e nd of s hooting stage
ey	e yed stage (time to eyed stage of fish eggs)
f5	50% flowering
fb	f ull b loom stage
fd	frond
frt	to fertilization

Code	Definition
fi	flower initiation
fl	flower stage
fr	to fruit stage
frt	to fertilization
fry	fry
fs	flowering stage
ge	g eneration
gm	to g ermination
go	gosner stage
gs	g rowing s ea s on
gts	gastrula stage
hbf	hours pre-fertilization
hpe	hours post emergence
hpf	h ours p ost f ertilization
hph	h ours p ost h atch
hpr	hours post-release
hv	h arvest
ht	until h atch
i2	intermolt to 2nd molt
inst	instar
it	intermolt to molt
kh	k nee- h igh stage
lfd	leaf drop
lgp	to lag phase
log	to log phase
ls	leaf stage

Code	Definition
ls4	4-6 leaf stage
ls6	6 leaf stage
ls9	9-10 leaf stage
LSI	Larval Stage Index
lvp	larva to pupa
ma	to maturity
mpf	minutes post fertilization
mph	months post hatch
myp	Mysis to post-larvae
pan	panicling stage
pd	1 st pod set
pgm	post germination
pm	post molt
pr	priming (The harvesting of ripened tobacco leaves)
pro	propagation stage
rc	ready for consumption
slk	to silk stage
so	shooting stage
spref	seconds before fertilization
spf	seconds post fertilization
sst	substage
stg	stage
su	summer
swm	swim-up
tr	1 st trifoliate leaf
ts	time to tassle

Code	Definition
vg	v egetative stage
wbh	weeks pre-hatch
wpe	weeks post emergence
wph	weeks post hatch
wphv	Weeks pre harvest
wps	weeks post swim-up
yc	year class
yph	years post-hatch
zm	z oeae- m egalop
zmy	z oeae to m ysis
-n	negative values represent pretreatment times
-x	pretreatment time unknown
/	NOT TO BE USED AFTER 10/15/99, USE QUALITATIVE CODES (ABOVE) INSTEAD: used when the duration is qualitative rather than quantitative; information is recorded as text in the Remarks (eg., 12 th egg after hatch but not end of study)

Appendix J. Exposure Type Codes

Code	Definition
D see Appendix J.1	Diet - exposure through consumption; includes diet and/or water intake; this code will be automatically assigned if one of the diet categories from Appendix J.1 is used
I see Appendix J.2	Injection -insertion of the toxicant into the skin, vessels, muscle, subcutaneous tissue, or any body cavity; this code will be automatically assigned if one of the injection categories from Appendix J.2 is used
M see Appendix J.3	Multiple-exposure to the toxicant through two or more different routes.
N see Appendix J.4	Inhalation - exposure to the toxicant through breathing; this code will be automatically assigned if one of the injection categories from Appendix J.3 is used
NR	Exposure type is Not Reported
T see Appendix J.5	Topical - exposure includes dermal, eggshell, immersion or soaking; this code will be automatically assigned if one of the topical categories from Appendix J.4 is used
V see Appendix J.6	Environmental - exposure includes field in situ and specific application types as well as incidental exposures; this code will be automatically assigned if one of the environmental categories from Appendix J.5 is us

Appendix J.1 Diet (D) Exposure Codes

Code	Definition
DT	diet, unspecified
FD	chemical incorporated into the food
DR	chemical incorporated into the water
CH	choice of treated or untreated food or water
GV	gavage
GE	Gestational (Exposed during gestation)
LC	Lactation (Exposed via mother's milk)
OR	oral via capsule

Appendix J.2 Injection (I) Codes

Code	Definition
IJ	injection, unspecified
IA	Intra-arterial (injected via the artery)
IB	Egg albumin injection
IC	Air sac (air cell) injection
IG	intragastrical (digestive system)
IH	intrahemocoel
IM	intramuscular
IP	intraperitoneal
IL	intra placental
IR	intraprostomial
IS	inrasegmentally (insects)
IE	intratesticular
IV	intravenous

Code	Definition
SC	subcutaneous
SD	subdermal
YK	yolk

Appendix J.3 Multiple (M) Application Codes

Code	Definition
MU	multiple routes between application groups (e.g. dermal and inhalation)

Appendix J.4 Inhalation (N) Application Codes

Code	Definition
IH	inhalation

Appendix J.5 Topical (T) Application Codes

Code	Definition
DM	dermal
MM	immersion
OC	ocular
PC	percutaneous
SA	surface area dose
SH	eggshell
TP	topical, general

Appendix J.6 Environmental (V) Exposure Codes [Also AQUIRE Field Test AP Type]

Code	Definition
AE	aerial (unknown type)
AG	aerial-granular

Code	Definition
AS	aerial spray application
CM	culture medium application
DA	direct application
DU	dusted
DW	dropwise application
EN	environmental, unspecified
FS	foliar spray
FU	fumigation
GG	ground granular
GM	growth medium application
GS	ground spray
HP	hydroponic solution application
HS	hand spray
IN	in situ
MI	misted
MT	multiple routes within environmental exposures, eg. Aerial spray and soil slurry to the same plots.
PR	present in soil
PT	painted
PU	pump
SO	dipped or soaked
SP	spray
SS	soil slurry
WA	watered

Appendix J.7 AQUIRE ONLY Exposure Type Codes

AQUIRE Lab Exposure Types (EXP TYP)

Code	Definition
[C]	Topical Exposure (Use specific code from App. J.5)
[D]	Diet or Oral exposure (includes simultaneous diet and water exposure) (Use specific code from App. J.1)
F	Flow-through
[I]	Injection (Use specific code from App. J.2)
L	Leaching (used for leachate and sediment exposures, if water conc reported)
P	Pulse (intermittent or fluctuating dosing)
R	Renewal
S	Static (recirculating exposures are noted in <u>Exp Design</u>); algae tests where the time is <= 24 hr, static may be assumed, and coded as such by the reviewer

AQUIRE Field Exposure Types (EXP TYP)

Code	Definition
B	Tidal
[D]	Diet (Use specific code from App. J.1)
E	Lentic (static water system without measureable flow rate, e.g. ponds, lakes, troughs, irrigation ditches)
I	Injection
O	Lotic (flowing water system, e.g. streams)

[] = Old code. The codes will require maintenance to update records with new codes.

Appendix K. Application Frequency Codes

Code	Definition
ADL	Ad libitum ; without limit or restraint
CON	Continual ; non-pulsed
D/WK, 10-13WK	X times per week for 10 to 13 weeks
DLY	Daily ; dosing regime not specified
DLY for X D	Daily for X days
DLY for 5 D	Daily for 5 days
DLY for 2 H	Daily for 2 hours
EOD	Every other day
E X D	Every X days
E X H	Every X hours
E x H for 20 D	Every X hours for 20 days
E x MI	Every x minutes
E X WK	Every X weeks
G per D	Grams per day
H	Hour
H/D for 8 D	X hours per day for 8 days
HED	X hours every day
IN	in situ
RES	Restricted
STG	Stage
WKY	Weekly
X	Dosed x time(s) per study period; e.g. 1 time = 1X

X E 7-15 D	X times every 7 to 15 days
X for 1 H	X times for 1 hour
X for 1 MI	X times for 1 minute
X for 10 MI	X times for 10 minutes
X for 12 H	X times for 12 hours
X for 15 MI	X times for 15 minutes
X for 2 D	X times for 2 days
X for 2 H	X times for 2 hours
X for 24 H	X times for 24 hours
X for 3 H	X times for 3 hours
X for 3.5 H	X times for 3.5 hours
X for 30 MI	X times for 30 minutes
X for 5 H	X times for 5 hours
X for 5 MI	X times for 5 minutes
X for 6 H	X times for 6 hours
X for 60 MI	X times for 60 minutes
X H E12H	X hours every 12 hours
X H E3D	X hours every 3 days
X H EOD	X hours every other day
X H per D	X hours per day
X H WKY	X hours weekly
X in 12 H	X times in 12 hours
in 14 D	X times in 14 days
X in 24-72 H	X times in 24 to 72 hours
X in 48 H	X times in 48 hours

X for 84 H	X times for 84 hours
X for 96 H	X times for 96 hours
X MI per D	X minutes per day
X per FI	X times per flower initiation
X per h	X times per hour
X per 24 H	X times per 24 hours
X per 2d	X times per 2 days
X per 3d	X times per 3 days
X per 4d	X times per 4 days
X per 5 D	X times per 5 days
X per 12d	X times per 12 days
X per 14d	X times per 14 days
X per D, 10 X	X times per day, 10 times
X per D, 1 WK	X times per day for 1 week
X per D, 6 D/WK	X times per day, 6 days per week
X per d	X times per day
X per wk	X times per week
X per 2 wk	X times per 2 weeks
X per 6 WK	X times per 6 weeks
X per wk/10 wk	X times per week per 10 weeks
X per mo	X times per month
X per yr	X times per year
X, 1X/D	X times, 1 time per day
X, 1X/Y	X times, 1 time per year

X, 1X/20 D	X times, 1 time per 20 days
X, 1X/2WK	X times, 1 time per 2 weeks
X, 1X/4WK	X times, 1 time per 4 weeks
, 2X in 14 H	X times, 2 times in 14 hours
X, 2X per WK	X times, 2 times per week
X, 96 H apart	X times, 96 hours apart
X,1 X E 15 D	X times, 1 time every 15 days
X,1 X per 15 D	X times, 1 time per 15 days
X,1Xper9-13D	X times, 1 time per 9-13 days
X,24 H per 14 D	X times, 24 hours per 14 days
X,48H apt E14D	X times, 48 hours apart every 14 days
X/WK for 3 WK	X times per week for 3 weeks
NR	Not Reported

Appendix L. Exposure Media Codes

Code	Definition
AGR	Agar
AQU	Aqueous
ART	Artificial soil (This includes soils that are created from individual soil components. For example, if clay, sand and organic matter are combined, as in OECD soils, these soils are coded as artificial.)
CUL	Culture Medium
FLT	Filter paper
HUM	Humus
HYP	Hydroponic
LIT	Litter
MAN	Manure
MIN	Mineral soil
MIX	Media Mixture (with comment)
NAT	Natural soil (This includes natural soils that are amended with nutrients.)
NONE	No substrate
NR	Not reported
OTH/	Other (with comment) Use this code when odd combinations of media are used and remark in Soil Information comments, i.e. 50/50 mixture of farina and peat
POP	Plaster of Paris
SED	Sediment
SLG	Sludge
UKS	Unspecified soil type

Appendix M. Control Type and Dose ID Codes

Code	Definition
B	Baseline or background control: parameters of actual or representative test species measured before and after administration of test chemical, though not as part of the same test scenario. Note: pretreatment values, collected during the same test scenario as the observed responses, are recorded as exposure concentrations with a negative exposure duration; <u>not</u> as baseline control parameters.
C	Concurrent control: controls are run simultaneously with the exposure, e.g. in the laboratory where a chemical free test chamber is used or in field studies where the control data are obtained upstream from the exposure data; also includes field tests where the controls are run in a separate system, ie. pond A and pond B or field A and field B
D	Exposure D ose level identifier
E	E ndpoint link identifier
H	H istorical control: applicable to natural field system testing, data collected prior to exposure often during an independent long-term survey of the area; see also B - B aseline
K	Data for control is presented but without accompanying methodology to identify procedures used
M	M ultiple controls were reported, e.g. historic and concurrent
NR	N ot reported; there is no information about presence or absence of controls in the publication
O	The ' O ' code should be used when a control is run in a different system (e.g. defined by different dilution water or soil properties) than the exposure treatments; e.g., control from pond A and effect information from pond B. See also C for concurrent controls. This also includes laboratory studies where different solvents are used for control versus treatment (e.g. Water was used as a solvent for test compound, controls were injected with saline, or a blood sample from an unexposed female used for a control for an exposed male).
P	P ositive controls were used

R	Range of doses
V	Carrier or solvent; organisms exposed to carrier or solvent as the only control
Z	Author states that no controls were used in the study

Appendix N. Exposure Dose and Observation/Response Value Units

a-amino N/24h	alpha aminonitrogen per 24 hours	AI mg/d	milligrams active ingredient per day
absrb	absorbance	AI mg/eu	active ingredient milligrams per experimental unit
act	activity	ai mg/kg	milligrams active ingredient per kilogram
act/g pro	activity per gram protein	AI mg/kg bdwt/d	active ingredient milligrams per kilograms body weight per day
act/g TI	activity per gram tissue	ai mg/kg org	milligrams active ingredient per kilogram organism
activ/noactiv	activated to non-activated ratio	ai mg/L	milligrams active ingredient per liter
acts/3 mi	acts per 3 minutes	ai mg/ml	milligrams active ingredient per milliliter
ad	adults	AI mg/org	active ingredient milligrams per organism
ad/jv	adults per juvenile	AI mL/eu	active ingredient milliliter per experimental unit
ae lb/100 gal	acid equivalent pounds per 100 gallons	AI ml/ha	active ingredient milliliters per hectare
ae mg/kg	acid equivalents milligrams per kilograms	AI ng	active ingredient nanograms
AI	active ingredient; followed by the unit, eg AI kg/ha	AI ng/mg bdwt	active ingredient nanograms per milligrams body weight
AI g/cm of dbh	active ingredient grams per centimeter of diameter breast height	AI ng/mL	active ingredient nanograms per milliliter
AI g/eu	active ingredient grams per experimental unit	ai oz/bu sd	ounces active ingredient per bushel of seed
AI g/kg plt	active ingredient grams per kilogram pellet	ai ppm	parts per million active ingredient
ai g/kg sd	active ingredient grams per kilogram seed	ai ml/100m2	milliliters active ingredient per 100 square meters
AI g/m	active ingredient grams per meter	AI ug	active ingredient micrograms
ai g/m2	grams active ingredients per square meter	ai ug/cm2	micrograms active ingredient per square centimeter
AI g/100 gal	active ingredient grams per 100 gallons	AI ug/g bdwt	active ingredient micrograms per gram body weight
AI g/100 kg	active ingredient grams per 100 kilograms	ai ug/g soil	micrograms active ingredient per gram soil
AI g/100 L	active ingredient grams per 100 liters	AI ug/ml	active ingredient micrograms per milliliter
ai g/100m2	grams active ingredient per 100 square meters	ALB:YK	albumen to yolk ratio
AI g/305 m	active ingredient grams per 305 meters	amend:unamend	ratio of amended to unamended treatments
ai l/ha	active ingredient liters per hectare	AU	arbitrary units
AI kg/100 kg sd	active ingredient kilograms per 100 kilograms seed	B'	Chromatid break
AI lb/acre	active ingredient pounds per acre	B''	Isochromatid break
AI lb/100 gal	active ingredient pounds per 100 gallons	BB unit	BB unit
AI mg/0.1 m2	active ingredient milligrams per 0.1 square meters	b/ml	billions per milliliter
		beats/mi	beats per minute
		beats*ml/mi2	beats * milliliter per square minutes
		bees/d	bees per day
		BO:LI	bone to liver ratio

Bq	becquerels	cell/u.a	cells per unit area
Bq/g	becquerels per gram	cellx10x2/ul	cells x10x2 per microliter
Bq/L	becquerels per liter	cell/8 srtl cel	cells per 8 Sertoli cells
Bq/kg	becquerels per kilogram	cfu/mg	colony forming units per milligram
Bq/mg	becquerels per milligram	chem/d	chemical per day
Bq/ml	becquerels per milliliter	CHLA:CHLB	ratio of chlorophyll a to chlorophyll b
Bq/org	becquerels per organism	CI	color index
births	births	Ci/L	curies per liter
bits	bits	Ci/mol	curies per mole
BR:BL	ratio of brain to blood	Ci/mmol	curies per millimole
branches/org	number of branches per organism	clusters	clusters
bt/mi	beats per minute	clutches	clutches
BU	Bessey Units	cm	centimeter
bushels	bushels	cm/d	centimeters per day
bushel/acre	bushels per acre	cm/g soil	centimeters per gram soil
burrows	burrows	cm/g bdwt/h	centimeters per gram bodyweight per hour
C	Centigrade, degrees	cm H2O	centimeters of water
cal	calories	cm/cm3	centimeters per cubic centimeter
cal/d	calories per day	cm2	centimeters squared
castings	earthworm castings	cm2/kg	centimeters squared per kilogram
casts/eu	casts per experimental unit	cm2/org	centimeters squared per organism
casts/m2/d	casts per square meter per day	cm2/100bees	centimeters squared per 100 bees
casts/pl	casts per plot	cm3	cubic centimeters
cc	cocoons	cm3/4L	cubic centimeters per 4 liters
cc O2 evolved	cubic centimeters of oxygen evolved	cm3/eu	cubic centimeters per experimental unit
cc/ad	cocoons per adult	cm3 O2/g/h	cubic centimeters of O2 per gram per hour
cc/10 ad	cocoons per 10 adults	cm/wk	centimeters per week
cc/eu	cocoons per experimental unit	cmol/kg	centimoles of charges per kilogram
cc/cntr	cocoons per container	cpm	counts per minute
cc/org	cocoons per organism	cpm 1e-4	counts per minute * 1 X 10 ⁻⁴
cc/org/8wk	cocoons per organism per 8 weeks	cpm X 1000	counts per minute X 1000
cc/org/wk	cocoons per organism per week	cpm/1e+5 cells	counts per minute per 1X10 ⁺⁵ cells
cc/sad	cocoons per surviving adult	cpm/cc	counts per minute per cocoon
cc/unit	cocoons per unit	cpm/g TI	counts per minute per gram tissue
cells	cells	cpm/L	counts per minute per liter
cells/1e+6 cells	cells per 1 X 10 ⁺⁶ cells	cpm/mg	counts per minute per milligram
cells/50 mg	cells per 50 milligrams	cpm/mg DNA	counts per minute per milligram DNA
cells/100 clm	cells per 100 coelomocytes	cpm/mg pro	counts per minute per milligram protein
cells/area	cells per area	cpm/mg RNA	counts per minute per milligram RNA
cells/mg TI	cells per milligram tissue	cpm/mg UA	counts per minute per milligram uronic acid
cell/mi x10x3	cells per minute x10x3	cpm/ml	counts per minute per millimeter
cells/ml	cells per milliliter	cpm/org	counts per minute per organism
cells/mm2	cells per square millimeter	CRB:BR	ratio of cerebellum to brain
cell/mm3	cells per cubic millimeter	CRM:BR	ration of cerebrum to brain
cells/mm cortex	cells per millimeter cortex	cRNA/mgRNA/DNA	(counts per minute RNA per milligram RNA) per milligram DNA
cells/mm folium	cells per millimeter folium		
cell:nuclei	ratio of cells to nuclei		
cells/TI	cells per tissue		

cwt/acre	hundredweights per acre		
CWU	CW units	dS/m	per minute treated to control deciSiemens per meter
cyc/deg	cycles per degree		
d	day	e/100hd	eggs per 100 hen days
DB/mg pro	lipid aliphatic double bounds per milligram protein	e/hd	eggs per hen day
dead:live	ratio of dead to live organisms	e/org	eggs per organism
degree	degree	e/org/d	eggs per organism per day
divisions/cell	divisions per cell	e/org/wk	eggs per organism per week
dm2	decimeters squared	ea/eu	ears per experimental unit
DNA:protein	DNA to protein ratio	egg cap/org	egg capsules per organism
DNA:RNA	DNA to RNA ratio	eggs	egg(s)
dpm	disintegrations per minute	eggs/BDAY	eggs per bird-day
dpm 1e-3/ml	disintegrations per minute * 1 X 10 ⁻³ per milliliter	eggs/d	eggs per day
dpm/167 mg TI	disintegrations per minute per 167 milligrams tissue	eggs/fm	eggs per female
dpm/EU	disintegrations per minute per experimental unit	eggs/fm/d	eggs per female per week
dpm/g	disintegrations per minute per gram of tissue	eggs/fm/wk	eggs per female per week
dpm/g*100	disintegrations per minute per gram*100	eggs/100 ad	eggs per 100 adults
dpm/800g soil	disintegrations per minute per 800 grams of soil	eggs/8 wks	eggs per 8 weeks
dpm/mg	disintegrations per minute per milligram	eggs/org	eggs per organism
dpm/mg FA	disintegrations per minute per milligram fatty acid	eggs/org/d	eggs per organism per day
dpm/mg GH	disintegrations per minute per milligram growth hormone	egg/org/wk	eggs per organism per week
dpm/mg GH*100	disintegrations per minute per milligram growth hormone*100	eggs/pair	eggs per pair
dpm/mg pro	disintegrations per minute per milligram protein	eggs/raft	eggs per raft
dpm/ml	disintegrations per minute per milliliter	em/FM	embryos per female
dpm/n	disintegrations per minute per N	eggs/fm/8 wk	eggs per female per 8 weeks
dpm treat:cntl	ration of disintegrations	enz act	enzyme activity or enzyme activity unit
		enz act/mg	enzyme activity per milligram
		eq/l	equivalents per liter
		eu	enzyme unit
		EU/g	enzyme unit (amount of enzyme needed to catalyze)/g
		failures	failures
		FD:Gain	ratio of weight of food consumed to weight gained
		FD:WTR	food to water ratio
		FER	feed efficiency ratio
		fl	femtoliters
		FM:ML	females to males ratio
		FT:PLC	fetus to placenta ratio
		fet	fetuses
		fetuses/litter	fetuses per litter
		final:initial	ratio of initial parameter to final parameter
		fledge/pair	fledglings per pair or young fledged per pair
		fm	females
		fm/lit	females per litter
		fmol	femtomol
		fmol/mg	femtomol per milligram

fmol/mg pro	femtomol per milligram protein		soil
fr	frames (bees)	g/5 m2	grams per 5 meters squared
FU/g	fluorescence units per gram	g/70d	grams per 70 days
G'	Chromatid gap	g/acre	grams per acre
G''	Isochromatid gap	g/BDAY	grams per bird-day
g	grams	g/bdwt e0.75	grams per body weight * 1e0.75
g%	gram percent	g/bee	grams per bee
g% w/v	gram percent on a weight per volume basis	g/cc	grams per cocoon
g/0.25 acre	grams per 0.25 acres	g/cm	grams per centimeter
g/0.5 m2	grams per 0.5 meters squared	g/cm2	grams per square centimeter
g/100 cm3	grams per 100 cubic centimeters	g/ctnr	grams per experimental container
g/100l	grams per 100 liters	g/d	grams per day
g/100g	grams per 100 grams	g/d/org	grams per day per organism
g/100g BW	grams per 100 grams body weight	g/d/wght	grams per day per weight
g/100g BW/d	grams per 100 grams body weight per day	g/dl	grams per deciliter
g/100g bdwt/h	grams per 100 grams per bodyweight/hour	g/eu	grams per experimental unit
g/100g org	grams per 100 grams organism	g/eu/d	grams per experimental unit per day
g/100kg org	grams per 100 kilograms organism	g/fed	grams per feddan (1 feddan = 1.038 acres)
g/d/100 g bdwt	grams per day per 100 grams body weight	g/fish	grams per fish
g/d/100kg org	grams per day per 100 kilograms organism	g/fruit	grams per fruit
g/100 le	grams per 100 leaves	g/ft2	grams per square foot
g/100 L	grams per 100 liters	g/g bdwt	grams per gram body weight
g/100ml	grams per 100 milliliters	g/g bdwt/d	grams per gram body weight per day
g/100 sd	grams per 100 seeds	g/g dry humus	grams per gram dry humus
g/100 stl	grams per 100 stolons	g/g fd	grams per gram food
g/1000 ft3	grams per 1000 cubic feet	g/g org	grams per gram organism
g/1000g	grams per 1000 grams	g GAIN/kg fd	grams weight gained per kilogram food
g/1000gr	grams per 1000 grains	g/h	grams per hour
g/13.125 ft2	grams per 13.125 square feet	g H2O/dm2/h	grams H2O per squared decameter per hour
g/15 cm	grams per 15 centimeters	g/ha	grams per hectare
g/200 m2	grams per 200 square meters	g/hd	grams per hen day
g/2500cm2	grams per 2500 centimeters squared	g/jv	grams per juvenile
g/4 d	grams per 4 days	g/kg	grams per kilogram
g/400m	grams per 400 meters	g/kg/d	grams per kilogram per day
g/5 kg soil	grams per 5 kilograms	g/kg bdwt	grams per kilogram body weight
		g/kg bdwt/d	grams per kilogram body weight per dry soil
		g/kg feed	grams per kilogram of feed
		g/kg fd	grams per kilogram food
		g/kg soil	grams per kilogram soil
		g/1.2 kg soil	grams per 1.2 kilogram soil
		g/1.4 kg soil	grams per 1.4 kilogram soil
		g/1.6 kg soil	grams per 1.6 kilogram soil
		g/1.8 kg soil	grams per 1.8 kilogram soil

g/L	grams per liter	index	index
g/LE	grams per leaf	IU	International Units (One IU is the amount of enzyme consuming or forming 1 umol substrate or 1 umol product per minute under standard conditions.) May also be noted as "SI units" (Système International d'unités)
g/m	grams per meter		
g/m2	grams per square meter		
g/m3	grams per cubic meter		
g/org	grams per organism		
g/org/d	grams per organism per day		
g/org/42 d	grams per organism per 42 days	IU/g	International Units per gram
g/org/eu	grams per organism per experimental unit	IU/g TI	International Units per gram tissue
g/org/wk	grams per organism per week	IU/l	International Units per liter
g/org/yr	grams per organism per year	IU/kg	International Units per kilogram
g/quadrant	grams per quadrant	IU/kg bdwt	International units per kilogram body weight
g/sample	grams per sample	IU/mg	International Units per milligram
g/shell	grams per shell		
g/ton	grams per ton	IU/mg Hb	International units per milligram hemoglobin
g/ug	grams per microgram		
g/wk	grams per week	IU/mg pro	International Units per milligrams protein
g GAIN/g fd/d	grams weight gained per gram food per day	IU/mg TI	International units per milligram tissue
g TI/100 g bdwt	grams tissue per 100 grams bodyweight	IU/ml	International Units per milliliter
Gain:FD	ratio of weight gained to weight of food consumed	IU/orgwt	International Units per organ weight
gal/100 gal	gallons per 100 gallons		
gal/acre	gallons per acre	J/beat	Joules per beat
gamma/day	gamma/day (Von Bertalanffy growth)	J/d	Joules per day
gamma/g TI	gamma counts per gram tissue	jv	juveniles
gg	gamma gamma	jv/ad	juveniles per adult
gila:neuron	gila to neuron ratio	jv/cc	juveniles per cocoon
grade	grade	jv/cntr	juveniles per container
grain/panicle	grains per panicle	jv/eu	juveniles per experimental unit
h	hour	jv/fm	juveniles per female
H'	Shannon-Weiner Diversity index	jv/ftcc	juveniles per fertile cocoon
HA units	Hemagglutinating units	jv/lit	juveniles per litter
hatchability	hatchability	jv/mated fm	juvenile per mated female
hsk:gr	ratio plant husk to grain	jv/nest	juveniles per nest
Hz	Hertz	jv/org/wk	juveniles per organisms per week
Hz/s	Hertz per second	jv/org	juveniles per organism
in	inches	k2/d	elimination rate constant 2 per day
in2	inches squared	K units	Karmen units
inclusion	internuclear inclusion body	KA units	King/Armstrong units
		KA/g	King/Armstrong units per

gram			100 milliliters
ka/d	elimination rate constant a per day	KI:BR Kunit/ml	kidney to brain ratio k unit per milliliter
kBq	kilobecquerels	L	liters
kBq/L	kilobecquerels per liter	lamellae/axon	lamellae per axon
kBq/dm3	kilobecquerels per cubic decimeter	layers	layers
kBq/eu	kilobecquerels per experimental unit	l/24 h	liters per 24 hours
kBq/ml	kilobecquerels per milliliter	L/ha	liters per hectare
K/ml	karmen units per milliliter	l/l	liter per liter
kcal	kilocalories	l/m2	liters per square meter
kcal/d	kilocalories per day	lb	pounds
kcal/100g	kilocalories per 100 grams	lb/11 gal/acre	pound per 11 gallons per acre
kg	kilograms	lb/90 ft2	pounds per 90 square feet
kg ae/ha	kilograms acid equivalent per hectare	lb/acre	pounds per acre
kg conc/d	kilograms of concentrate per day	lb/ac ft	pounds per acre foot
kg plt/ha	kilograms pellet per hectare	lbs ae/ac	pounds acid equivalent per acre
kg silage/d	kilograms of silage per day	lb/cwt sd	pounds per hundred weight seed
kg/0.5 m2	kilograms per 0.5 square meters	lb/d	pounds per day
kg/11 m	kilograms per 11 meters	lb/eu	pounds per experimental unit
kg/100 m2	kilograms per 100 square meters	lb/ft2	pounds per square foot
kg/d	kilograms per day	lb/gal	pounds per gallon
kg/eu	kilograms per experimental unit	lb/org/d	pounds per organism per day
kg/fed	kilograms per feddan (1 feddan = 1.038 acres)	lb/plot	pounds per plot
kg/ha	kilograms per hectare	LGTH/s	length per second
kg/hL	kilograms per hektoliter	LGTH:THIK	ratio of length to thickness
kg/L	kilograms per liter	LI:BR	liver to brain ratio
kg/mi2/mo	kilograms per square mile per month	lit	litters
kg/mm	kilograms per millimeter	lit/pr	litters per pair
kg/mu	kilograms per mu	litter %	litter percent
kg/org	kilograms per organism	ln(Wf/Wi)	natural log(mean survivor weight/mean initial weight)
kg/org/d	kilograms per organism per day	log rel	log relative activity/intensity
kg/wk	kilograms per week	log s	log time in seconds
kJ/d/org	kilojoules per day per organism	log2	log squared
kmol/m3	kilomoles per cubic meter	log2 titers	log2 titers
KA/100ml	king/armstrong units per	log 10 ug/g org	log 10 micrograms per gram organism
		LU:BR	lung to brain ratio
		maturity index	maturity index
		m/s	meters per second
		m3	cubic meters
		mBq	millibecquerels
		mBq/ml	millibecquerels per milliliter
		mCi	millicuries
		mCi	microCurie per kilogram
		mCi mg	millicuries milligram
		mCi/mg	millicuries per milligram
		mCi/ml	millicuries per milliliter

mCi/mmol	milliCuries per millimoles		per day
mg CO₂/dm²/h	milligrams carbon dioxide per squared decameter per hour	mg/10 g bdwt	milligrams per 10 grams body weight
metric t/ha	metric tons per hectare	mg/100g	milligrams per 100 grams
mM	milliMolar (millimoles per liter)	mg/100g org	milligrams per 100 grams organism
m enz act/mg	millienzyme activity per milligram	mg/100g bw	milligrams per 100 grams body weight
meq	milliequivalents	mg/100g bw/d	milligrams per 100 grams body weight per day
meq/g	milliequivalents per gram	mg/100kg org	milligrams per 100 kilograms of organism
meq/kg	milliequivalents per kilogram	mg/100 lbs	milligrams per 100 pounds
meq/L	milliequivalents per liter	mg/100lb/d	milligrams per 100 pounds per day
meq/100 g	milliequivalents per 100 grams	mg/100 mg TI	milligrams per 100 milligrams tissue
mg	milligrams	mg/100ml	milligrams per 100 milliliters
mg^{1/3}	milligrams to 1/3 power	mg/10g	milligrams per 10 grams
mg %	milligrams percent	mg/10g org	milligrams per 10 grams organism
mg at/L***	milligrams atom per liter ***Use mmol/L***	mg/12h	milligrams per 12 hours
mg C/g OM	milligrams carbon per gram organic matter	mg/24h	milligrams per 24 hours
mg CO₂/h/g	milligrams carbon dioxide per hour per gram	mg/24h/kg	milligrams per 24 hours per kilogram
mg CO₂/hr/g ndl	milligrams carbon dioxide per hour per gram of needles	mg/3 kg	milligrams per 3 kilograms
mg NH₃/ g org	milligrams ammonia per gram of organism	mg/454g	milligrams per 454 grams
mg NH₃/g org/h	milligrams ammonia per gram of organism per hour	mg/70g	milligrams per 70 grams
mg O₂/g org	milligrams oxygen per gram of organism	mg/bee	milligrams per bee
mg O₂/g org/h	milligrams oxygen per gram of organism per hour	mg/cc	milligrams per cocoon
mg P/100 g	milligrams phosphorus per 100 grams	mg/cntr	milligrams per container
mg pro/g	milligrams protein per gram	mg/cm	milligrams per centimeter
mg urea /g org	milligrams urea per gram of organism	mg/cm²	milligrams per square centimeter
mg urea/g org/h	milligrams urea per gram of organism per hour	mg/cm²*torr	milligrams per square centimeter X Torr
mg/%	milligrams per percent	mg/cm²/d	milligrams per square centimeter per day
mg/0/d	milligrams per organism	mg/cm³	milligrams per cubic centimeter
		mg/d	milligrams per day
		mg/d/bdwt	milligrams per day per body weight
		mg/d/wght	milligrams per day per weight
		mg/d/100 mg org	milligrams per day per 100 grams organisms
		mg/d/100 lbs	milligrams per day per 100 pounds
		mg/dl	milligrams per deciliter
		mg/dm²/h	milligrams per square

decimeter per hour		mg/kg bdwt/d	milligrams per killogram body weight per day
mg/dm3	milligrams per cubed decimeter	mg/kg bdwt/wk	milligrams per kilogram body weight per week
mg/dose	milligrams per dose	mg/kg dw org/d	milligrams per kilogram dry weight organism per day
mg/eu	milligrams per experimental unit	mg/kg d soil	milligrams per kilograms dry soil
mg/fish	milligrams per fish	mg/kg diet	milligrams per kilogram diet
mg/g	milligrams per gram	mg/kg dry wt	milligrams per kilogram dry weight
mg/g ash	milligrams per gram ash	mg/kg egg	milligrams per kilogram egg
mg/g bdwt	milligrams per gram body weight	mg/kg fd	milligrams per killogram food
mg/g/ clay	milligrams per gram clay	mg/kg litter	milligrams per kilogram litter
mg/g fd	milligrams per gram food	mg/kg media	milligrams per kilogram media
mg/g fluid	milligrams per gram fluid	mg/kg org	milligrams per kilogram organism
mg/g humus	milligrams per gram humus	mg/kg soil	milligrams per kilogram soil
mg/g N	milligrams per gram nitrogen	mg/kg d soil	milligrams per kilogram dry soil
mg/g org	milligrams per gram of organism	mg/kg TI	micrograms per milligrams tissue
mg/g pod	milligrams per gram of pod	mg/kg/d	milligrams per kilogram per day
mg/g soil	milligrams per gram of soil	mg/kg/fish	milligrams per kilogram per fish
mg/g/d	milligrams per gram per day	mg/kg/h	milligrams per kilograms per hour
mg/g MIT	micrograms per gram mitochondria	mg/kg/L	milligrams per kilogram per liter
mg/g pro	milligrams per gram protein	mg/kg org/d	milligrams per kilogram organism per day
mg/g TI	milligrams per gram tissue	mg/kg/wk	milligrams per kilogram per week
mg/g TI/h	milligrams per gram tissue per hour	mg/kg wt	milligrams per kilogram weight
mg/gland/g bdwt	milligrams per gland per gram body weight	mg/kg wet wt	milligrams per kilogram wet weight
mg/h	milligrams per hour	mg/kg wt/d	milligrams per kilogram weight per day
mg/h/g bdwt	milligrams per hour per gram body weight	mg/l	milligrams per liter
mg/ha	milligrams per hectare	mg/L/d	milligram per liter per day
mg H2O/d*cm2*T	milligrams water per day*square centimeters*Torr	mg/L media	milligrams per liter media
mg H2O/d*cm2*torr	milligrams water per day X square centimeter X Torr	mg/m3	milligrams per cubic meter
mg/in2/d	milligrams per square inch per day	mg/mg	milligrams per milligram
mg/jv	milligrams per juvenile	mg/mg node	milligrams per milligram nodules
mg/kg	milligrams per kilogram	mg/mi	milligrams per minute
mg/kg bdwt	milligrams per killogram body weight	mg/ml	milligrams per milliliter
		mg/mm2	milligrams per square milliliter

mg/org	milligrams per organism	ml/d	milliliters per day
mg/org/d	milligrams per organism per day	ml/d/100g BW	milliliters per day per 100 grams bodyweight
mg/org/wk	milligrams per organism per week	ml/d/kg BW	milliliters per day per kilogram body weight
mg N/100 ml	milligrams nitrogen per 100 milliliter	ml/d/org	milliliters per day per organism
mg/orwt	milligrams per organ weight	ml/eu	milliliters per experimental unit
mg P/h/g TI	milligrams phosphorus per hour per gram tissue	ml/eu/d	milliliters per experimental unit per day
mg/TI	milligrams per tissue	ml/g food	milliliters per gram food
mg TI/g bdwt	milligrams tissue per gram body weight	ml/g/h	milliliters per gram per hour
mg TI/kg bdwt	milligrams tissue per kilogram body weight	ml/gal	milliliters per gallon
mg/wk	milligrams per week	ml/h	milliliters per hour
mg CO2/m2/sec	milligrams carbon dioxide per squared meter per second	ml/h/g bdwt	milliliters per hour per gram body weight
mg p/g	milligrams protein per gram	ml/ha	milliliters per hectare
mg%	milligram %	ml/injection	milliliters per injection
mg/vol	milligrams per volume	ml/kg	milliliters per kilogram
mi	minute	ml/kg bdwt	milliliters per kilograms body weight
mi/12 h	minutes per 12 hours	ml/kg/d	milliliters per kilogram per day
mi/d	minutes per day	ml/kg org/d	milliliters per kilogram organism per day
mi/org	minutes per organism	ml/lit	males per litter
mi/nmol Rh	minutes per nanomoles per nanomol rhodopsin	ml/mi/kg	milliliters per minute per kilogram
micronaires	micronaires	ml/mi/100g	milliliters per minute per 100 grams
microns	microns	ml CO2/mi	milliliters CO2 per minute
MK:SR	milk to serum ratio	ml O2	milliliters O2
ml	milliliters	ml O2/mg TI	milliliters O2 per milligram tissue
ML	males	ml/org	milliliters per organism
ML/total	males per total population	ml/org/d	milliliters per organism per day
ml/10 L	milliliter per 10 liters	ml/plot	milliliters per plot
ml/100g	milliliters per 100 grams	ml/wk	milliliters per week
ml/100g BW	milliliters per 100 grams body weight	mlcl/actin mlcl	molecules per actin molecule
ml/100g bdwt/d	milliliters per 100 grams body weight per day	ML:FM	ratio of males to females
ml/16h	milliliters per 16 hours	mm	millimeters
ml/24 h	milliliters per 24 hours	mm x 100	millimeters x 100
ml/50 kg seed	milliliters per 50 kilograms seed	mmg	micronmilligrams
ml/70d	milliliters per 70 days	mmHG	millimeters mercury
ml/body wt	milliliters per body weight	mmHG/s	millimeters mercury per second
ml/cntr	milliliters per container	mmHg/beat/mi*-3	millimeters mercury per beat per minute * 1 X 10-3
		mm/d	millimeters per day
		mm/org	millimeters per organism
		mm/ug pro	millimeters per microgram

protein			per minute
mM/g	millimolar per gram		
mM/kg bdwt	millimoles per kilogram body weight	mmol/ml/h	millimoles per milliliter per hour
mM/L	millimoles per liter	mmol NO2/kg	millimoles nitrogen dioxide per kilogram
mm2	square millimeters	mmol H2O/m2/s	millimoles water per square meter per second
mm2/mm3 X 1e-9	square millimeters per cubic millimeter X 1 X 10 -9	mmu	absolute milli-mass units
mm2/org/d	square millimeters per organism per day	mo	month
mm3	cubic millimeters (abbreviated in literature)	mol	moles
some as cmm)		mol/egg	moles per egg
mm3/100g d soil	cubic millimeters per 100 grams dry soil	mol/L	moles per liter
mm3/dm3	cubic millimeters per cubic decimeter	mol/g	moles per gram
mm3/L	cubic millimeters per liter	mol/g soil	moles per gram soil
mm3/mg/h	cubic millimeters per milligram per hour	mol/kg	moles per kilogram
mm3/mm3	cubic millimeters per cubic millimeter	mol/m3	moles per cubic meter
mmol	millimoles	mol/ml	moles per milliliter
mmol/d	millimoles per day	mol/org	moles per organism
mmol/g	millimoles per gram	mol NO2/h/g	moles NO2 per hour per gram
mmol/g dry wt	millimoles per gram dry weight	molal	molality
mmol/100 g	millimoles per 100 grams	mole%	mole percent
mmol/g food	millimoles per gram food	M	molar
mmol/h/g TI	millimoles per hour per gram tissue	morph/org	ectomycorrhizal morphotypes per organism
mmol/kg	millimoles per kilogram	mOsm	milliosmoles
mmol/kg/d	millimoles per kilogram per day	mosmols/l	mosmoles (conc osmotic particles in solution) per liter
mmol/kg/h	millimoles per kilogram per hour	mouse unit/ml	mouse units per milliliter
mmol/kg soil	millimoles per kilogram soil	MPa	megaPascals
mmol/L	millimoles per liter (**equivalent to mg at/L)	mp/mg pro/15mi	microsomal proteins/milligram protein per 15 minutes
mmol/L soil	millimoles per liter soil	ms	milliseconds
mmol/m2/s	millimoles per square meter per second	mu	milliunits
mmol/m3	millimoles per cubic meter	mU/d	microunits per day
mmol/mi/mg	millimoles per minute per milligram	mU/g	milliUnits per gram organism
mmol/mg/mi	millimoles per milligram	mU/ml	milliunit per milliliter
		mU/24 h/kg	milliunit per 24 hours per kilogram
		mu/mg	milliunit per milligram
		mu/mi/ml	milliunit per minute per milliliter
		mu/ml	milliunit per milliliter
		mu/24 h	milliunit per 24 hours
		mu/org	milliunit per organism
		mW	milliwatts
		N	normal
		NA	not applicable
		nCi	nanoCuries

nCi/g org	nanoCuries per gram organism	ng/mg	nanograms per milligram
nCi/L	nanoCuries per liter	ng/mg bdwt	nanograms per milligram body weight
ng	nanograms	ng/mg/mi	nanograms per milligram per minute
ng/0.3 L	nanograms per 0.3 liters	ng/mg fd	nanograms per milligram food
ng/100g bdwt	nanograms per 100 grams per bodyweight	ng/mg pro	nanograms per milligram protein
ng/24h	nanograms per 24 hours	ng/min	nanograms per minute
ng ATP/g d soil	nanograms ATP per grams dry soil	ng/mi/org	nanograms per minute per organism
ng/cm	nanograms per centimeter	ng/ml	nanograms per milliliter
ng/cm2	nanograms per square centimeter	ng/ml/h	nanograms per milliliter per hour
ng/d	nanograms per day	ng/ml/mi	nanograms per milliliter per minute
ng/dl	nanograms per deciliter	ng/ml blood/d	nanograms per milliliter blood per day
ng/egg	nanograms per egg	ng/mm/day	nanograms per millimeter per day
ng/eu	nanograms per experimental unit	ng/org	nanograms per organism
ng/fish	nanograms per fish	ng/orwt	nanograms per organ weight
ng/g	nanograms per gram	ng/TI	nanograms per tissue
ng/g bdwt	nanograms per gram body weight	ng/ul	nanograms per microliter
ng/g/d	nanograms per gram per day	ngkat/mg pro	nanokatals per milligrams protein
ng/g diet	nanograms per gram diet	nl/L	nanoliters per liter
ng/g dry wt	nanograms per gram dry weight	nM	nanomolar (nanomoles per liter)
ng/g egg	nanograms per gram egg	nM/L	nanomolar per liter
ng/g TE	nanograms per gram Toxic Equivalences	nM/g	nanomolar per gram
ng/g TI	nanograms per gram tissue	nM DSMN:uM LYSI	nanomoles desmosine to micromoles lysine ratio
ng/g wet wt	nanograms per gram wet weight	nmol	nanomoles
ng/g org	nanograms per gram organism	nmol/100 mg pro	nanomoles per 100 milligrams protein
ng/g TI/4 h	nanograms per gram tissue per 4 hours	nmol/100mg pro/h	nanomoles per 100 milligrams protein per hour
ng/gland	nanograms per gland	ng/100 ml	nanograms per 100 milliliters
ng/kg	nanograms per kilogram	nmol ATP/g soil	nanomoles adenosine triphosphate per gram of soil
ng/kg bdwt/d	nanograms per kilogram body weight per day	nmol DOPA/g/h	nanomoles DOPA per gram per hour
ng/kg/day	nanograms per kilogram per day	nmol enz/hr	nanomoles enzyme per hour
ng/kg fd	nanograms per kilogram food	nmol H2O2/mi/mg	nanomoles of peroxide per minute per milligram protein
ng/kg/wk	nanograms per kilogram per week	nmol/egg	nanomoles per egg
ng/L	nanograms per liter	nmol mdhyde/g	nanomoles malonaldehyde per gram
		nmol PBG/h/ml	nanomoles porphobilinogen per hour per milliliter

nmol PBG/g TI/h	nanomoles porphobilinogen per gram tissue per hour	nmol/mg/20mi	nanomoles per milligram per 20 minutes
nmol/g	nanomoles per gram	nmol/mg/mi	nanomoles per milligram per minute
nmol/g pro	nanomoles per gram protein	nmol/mgpro/30mi	nanomoles per milligram protein per 30 minutes
nmol/g pro/mi	nanomoles per gram per protein per minute	nmol/mg TI	nanomoles per milligram tissue
nmol/g ro/4 h	nanomoles per gram root per 4 hours	nmol/mi/g	nanomoles per minute per gram
nmol/g/30mi	nanomoles per gram per 30 minutes	nmol/mi/mg	nanomoles per minute per milligram
nmol/g/4 mi	nanomoles per gram	nmol/mi/mg pro	nanomoles per minute per milligram protein
nmol/g/mi	nanomoles per gram per minute	nmol/mi/ml	nanomoles per minute per milliliter
nmol/g/h	nanomoles per gram per hour	nmol/mi/ml RBC	nanomoles per minute per milliliter red blood cells
nmol/g humus	nanomoles per gram per humus	nmol/mlpro/30mi	nanomoles per milliliter protein per 30 minutes
nmol/g soil	nanomoles per gram soil	nmol/mol	nanomoles per mole
nmol/g TI	nanomoles per gram tissue	nmol/nm p450/mi	nanomoles per nanomole cytochrome P450 per minute
nmol/g TI/h	nanomoles per g tissue per hour	nmol/org/h	nanomoles per organism per hour
nmol/h/mg pro	nanomoles per hour per milligram protein	nmol/org/0.5 h	nanomoles per organism per 0.5 hours
nmol/h/ml RBC	nanomoles per hour per milliliter red blood cells	nmol/org/h	nanomoles per organism per hour
nmol/kg	nanomoles per kilogram	nmol/TI	nanomoles per tissue
nmol/kg bdwt	nanomoles per kilogram body weight	no	number
nmol/kg/m	nanomoles per kilogram per minute	no >15cm	number that are greater than 15 centimeters
nmol/l	nanomoles per liter	no/1 mi	number per 1 minute
nmol/l RBC/h	nanomoles per milliliter red blood cells per hour	no/2.8 mm2	number per 2.8 square millimeters
nmol MDA/mg pro	nanomoles malonaldehyde per milligram protein	no/5 mi	number per 5 minutes
nmol/mg	nanomoles per milligram	no/10 mi	number per 10 minutes
nmol/mg/h	nanomoles per milligram per hour	no/12 h	number per 12 hours
nmol/mg/15mi	nanomoles per milligram per 15 minutes	no/15 mi	number per 15 minutes
nmol/ml	nanomoles per milliliter	no/30 mi	number per 30 minutes
nmol/mg pro	nanomoles per milligram protein	no/100 blsm clt	number per 100 blossom cluster
nmol/mg pro/mi	nanomoles per milligram protein per minute	no/100u2	number per 100 square microns
		no/200 cells	number per 200 cells
		no/1000 sperm	number per 1000 sperm
		no/1000 um2	number per 1000 square micrometers
		no/1500x field	number per 1500x field
		no/5000 cells	number per 5000 cells
		no/area	number per area
		no/cell	number per cell

no/cm	number per centimeter	NR	not reported
no/d	number per day	nuclei:nucleoi	ratio of nuclei to nucleoi
no/eu	number per experimental unit	OD	optical density
no/fm	number per female	OD/100% RBC	optical density of 100% red blood cells
no follicles	number of follicles	OD/50 mg pro	optical density per 50 milligrams protein
no/g	number per gram	OD/g pro	units of optical density change per gram protein
no/g soil	number per gram soil	OD/mg pro	optical density per milligram protein
no/h	number per hour	OD/mi/mg pro	optical density per minute per milligram protein
no/ha	number per hectare	OD/WGHT	optical density per unit weight
no/litter	number of organisms per litter	ODx10x3	optical density x10x3
no/m	number per meter	open bol/org	open bolls per organism
no/m2	number per square meter	org	organisms
no/mm3	number per cubic millimeter (also known as no/cmm)	org/10 m	organisms per 10 meters
no/mi	number per minute	org/100g soil	organisms per 100g soil
no/mm2	number per square millimeter		
no/mm2 * 1e-4	number per square millimeter X 1 X 10 ⁻⁴	org/0.25ft2	organisms per 0.25 square feet
no/mm3 * 1e-4	number per cubic millimeter X 1 X 10 ⁻⁴	org/0.25m2	organisms per 0.25 square meters
no/mm3 * 1e-8	number per cubic millimeter X 1 X 10 ⁻⁸	org/0.3m	organisms per 0.3 meters
no/neuron * 1e-3	number per neuron X 1 X 10 ⁻³	org/50cm2	organisms per 50 square centimeters
no/mo	number per month	org/60 leaves	organisms per 60 leaves
no/nuclei	number per nuclei	org/200 m2	organisms per 200 square meters
no/org	number per organism	org/200cm3	number of organisms per 200 cubic centimeters of soil
no/panicle	number per panicle	org/cm ro	organisms per centimeter root
no/plot	number per plot	org/cntr	organisms per container
no/preg FM	number per pregnant female	org conc/soil c	organism concentration per soil concentration
no/sec	number per second	org/d/cntr	organisms per day per container
no/section	number per section	org/eu	organisms per experimental unit
no/seed	number per seed	org/ft2	organisms per square foot
no/sertoli cells	number per sertoli cells	org/fm	organisms per female
no/so	number per shoot	org/g	organisms per gram
no/trap	number per trap	org/g dry soil	organisms per gram dry soil
no/100 WBC	number per 100 white blood cells	org/g humus	organisms per gram humus
no/100um2	number per 100 square micrometers	org/g root	organisms per gram root
no/1000	number per 1000	org/g soil	organisms per gram soil
no/1000 RBCE	number per 1000 red blood cells	org/ha	organisms per hectare
no/33 lbs	number per 33 pounds	org/kg soil	organisms per kilogram soil
no errors	no errors		
no sites	number of sites		

org/km2	organisms per square kilometer	% cortex	percent of cortex
org/lit	organisms per litter	% dev CNTL	percent deviation from control
org/m	organisms per meter	% d wght	percent dry weight
org/m2	organisms per square meter	% dose ret	percent dose retained
org/mi	organisms per minute	% dose/g TI	percent of dose per gram of tissue
org/plot	organisms per plot	% dose/h	percent dose per hour
org/sample	organisms per soil sample	% DT	percent of digestive tract
org/sector	number of organisms per sector	% earliness	percent earliness (percent of total cotton yield obtained during the first picking)
org/site	organisms per site	% FATL	percent of total fatty acids
org/trap	organisms per trap	% fertile	percent fertile
org/trap/d	organisms per trap per day	%FM	percent female
org/tree	organisms per tree	% g/g bdwt	percent gram per gram body weight
org/w>150 mmHg	organisms with blood pressure >150 millimeters mercury	% ingested	percent of ingested
org/w>160 mmHg	organisms with blood pressure >160 millimeters mercury	% intake	percent of intake
		%lit	percent of litter
		% mg	percent milligrams
		% mg/g bdwt	percent milligrams per gram body weight
org/wk	organisms per week	% ML	percent male
OT	optical transmission	% NaCl	percent sodium chloride
OT/1 cm WDT	Optical transmission per 1 centimeter bone width	% of CNTL	percent of control
OT/1 mm CCT	optical transmission per 1 millimeter combined cortical thickness	% of diet	percent of diet
OT/10 cm BO	optical transmission per 10 centimeters bone	% of initial	percent of initial quantity
OT/10 kg WGHT	optical transmission per 10 kilograms weight	% of max yld	percent of maximum yield
OV:BR	ovary to brain ratio	% org	percent of organisms
oz/acre	ounces per acre	% prod	percent production [(# eggs/# hen days)*100]
%	percent	% PRTL	percent of total protein
%act	percent activity	% RBC	percent red blood cells
% AI	percent active ingredient	% sat	percent saturation
% arb	percent arbuscularity	% sperm	percent sperm
% ash	percent ash	% tolerance	percent tolerance
% of bdwt	percent of body weight	% total oil	percent of total oil content
% cell volume	percent cell volume	% g	percent grams
% CEC	% of soil cation exchange capacity	%/g	percent per gram
% change	percent change	%*g	percent multiplied by weight in grams
% clitellate	percent clitellate	% / min	percent per minute
% CNTL RI	percent of control Ratcliff Index	%/ml	percent per milliliter
% corn	percent corn pollen	%/org/d	percent per organism per day
		% of total	percent of total
		% PLIPD	percent of total phospholipid
		% RI	percent Ratcliff Index
		% soil	percent soil
		% TIME	percent of time
		% total dose	percent total dose

% vol	percent volume		Equivalent per gram egg
% wet wght	percent wet weight	pH	pH
%/d	percent per day	PIg/L	PI grams per liter
%/g TI	percent per gram tissue	PLC:BL	placenta to blood ratio
%/wk	percent per week	PL:BL	plasma to blood ratio
% WSF	percent water soluble fraction	pmol/egg	picomoles per egg
		pmol/hr/mg	picomoles per hour per milligram
[% inhib]	[percent inhibition]	pmol/g	picomoles per gram
% S/ppm Zn	percent sulfur per parts per million zinc	pmol/g egg	picomoles per gram egg
%succ br/rm	percent successful broods per female	pmol/g/mi	picomoles per gram per minute
% wght	percent of weight	pmol/L	picomoles per liter
% wght/org	percent weight per organism	pmol/kg egg	picomoles per kilogram egg
% w/w	percent weight per weight	pmol/mg/30 mi	picomoles per milligram protein per 30 minutes
% w/v	percent weight per volume	pmol/ml	picomoles per millimeter
% v/v	percent volume per volume	pmol/mg	picomoles per milligram
		pmol/mg/d	picomoles per milligram per day
pair	pair	pmol/mg pro/mi	picomoles per milligram protein per minute
pc	permeability constant	pmol/mg pro/h	picomoles per milligram protein per hour
PCI	plastochron index	pmol/mg/mi	picomoles per milligram per minute
pCi/g	picoCuries per gram	pmol/mg/ 10 mi	picomoles per milligram per 10 minutes
pCi/L	picoCuries per liter	pmol/mg/h	picomoles per milligram per hour
pCi/ml	picoCuries per milliliter	pmol/mg/nmol R	picomoles per milligram per nanomol rhodopsin
pecks/s	pecks per second	pmol/mi/g TI	picomoles per minute per gram tissue
pellet/d	pellets per day	pmol/mi/mg pro	picomoles per minute per milligram protein
pellet/org/d	pellets per organism per day	pmol/nm p450/mi	picomoles per nanomole cytochrome P450 per minute
pellets	pellets	ppb	parts per billion
pg	picograms	ppb/2H/org	per two hours per organism
pg/cell	picograms per cell	pphr	parts per hundred rubber
pg/dm3	picograms per cubic decimeter	ppm	parts per million
pg/g	picograms per gram	ppm dw fd	parts per million dry weight food
pg/g egg	picograms per gram of egg	ppm food	parts per million food
pg/L	picograms per liter	ppm H2O	parts per million water
pg/kg bdwt/d	picograms per kilogram body weight per day	ppm-hour	parts per million hour
pg/kg egg	picograms per kilogram egg	ppm/d/kg bdwt	parts per million per day per kilogram body weight
pg/mg org	picograms per milligram organism	ppm/organi	parts per million per organism
pg/mg TE	picograms per milligram Toxic Equivalences		
pg/ml	picograms per milliliter		
pg/org	picograms per organism		
pg/TI	picograms per tissue		
pg TE/g egg	picograms Toxic		

ppm soil	parts per million soil	SFU	sigma Frankel units
ppm/eu	parts per million per experimental unit	sgth:thik	Strength to thickness ratio
ppmw	parts per million by weight	sgth:wght	Strength to weight ratio
prdt/mi/mg pro	product formed per minute per milligram protein	sigma u/100ml	sigma units per 100 milliliters
pt	pints	SL unit	SL unit
pt/ac	pints per acre	SL:ME	Slice to median ratio
q/ha	quintals per hectare (1 quintal = 100 kilograms)	so/ft2	shoots per square foot
[RA]	[ratio: use the number, no unit needed]	so:gr	ratio shoot to grain
R	weight/(length x width) an index of eggshell quality	so:ro	ratio shoot to root
RA 1e-3	ratio * 1e-3	SP:BR	spleen to brain ratio
RA/wk	ratio per week	species	species
rate/100 org	rate per 100 organisms	spines/ u area	spines per unit area
rate/mi	rate per minute	str:gr	ratio plant straw to grain
rev	revolutions	succ br	successful broods
rev/h	revolutions per 5 hours	succ br/fm	successful broods per female
RF units	RF units	T3:T4	Ratio of triiodothyronine (T3) to thyroxine (T4)
rgv	relative gray value	t/ha	tons per hectare
RI	Ratcliffe index (shell wt/egg length x width mm2)	t/ha gr/t/ha gr + str	tons per hectare grain plus straw
RNA:protein	RNA to protein ratio	taxa	taxa
ro/so	root to shoot ratio	TE:BR	testes to brain ratio
rpm	revolution per minute	tillers/m2	tillers per square meter
RR	Centric fusions	tons/acre	tons per acre
RSA/TI	relative specific activity per tissue	top:root	ratio plant tops to roots
RV:TV	ratio of right ventricle to total ventricle	treated:cntl	ratio treated to control
s	seconds	u	units
SA	Specific activity	U/100 mg TI	Units per 100 milligram tissue
s/12 rpm	seconds per 12 revolutions per minute	u2	square microns
s/16 rpm	seconds per 16 revolutions per minute	u2/300,000 u2	square micrometers per 300,000 micrometers squared
s/8 rpm	seconds per 8 revolutions per minute	u3	cubic microns
sd/org/d	seeds per organism per day	u act	unit activity (an increase in absorbance at 555 nm of 0.100, with a 1.0 cm light path, per milliliter of erythrocytes per hour, at 38 C).
s/g	seconds per gram	u act/h	unit activity per hour
s/h	seconds per hour	u eq/g pro/mi	microatom equivalents per gram protein per minute
sessions	sessions	u/co2/50mg/10mi	units per carbon dioxide per 50 milligrams per 10 minutes
		u/d	units per day
		u/mg N2	units per mg N2
		u/mg TI	units per milligram tissue

U/ml	Units per milliliter		soil per hour
U/ml RBC	units per milliliter red blood cells	ug enz/g/h	microgram enzyme per gram per hour
		ug frmzn/100g	micrograms formazan formed per 100 grams tissue (formazans: Coloured azo compounds formed by the reduction of tetrazolium salts. Employing this reaction, oxidoreductase activity can be determined quantitatively in tissue sections by allowing the enzymes to act on their specific substrates in the presence of tetrazolium salts.
U of fl	units of fluorescence		
u/g	units per gram		
u/l	units per liter		
u/mg	units per milligram		
U/mg pro	units per milligram protein		
u/ml	units per milliliter		
u/TI	units per tissue		
U/0.2 ml	units per 0.2 milliliters		
uBq	microBecquerels		
uCi	microcuries		
uCi/100g org	microcuries per 100 grams organism	ug GHA/1e+6 c/h	micrograms gamma-glutamylhydroxamate per 1X10 +6 cells per hour
uCi/3.6mg	microcuries per 3.6 milligrams	ug N/g	micrograms nitrogen per gram.)
uCi/30mg	microcuries per 30 milligrams	ug NANA/TI	micrograms N-acetyl neuraminic acid per tissue
uCi/L	microcuries per liter	ug O/g pro/mi	micrograms oxygen per gram protein per minute
uCi/g	microcuries per gram	ug PAP/g/20 mi	micrograms peroxidase-anti-peroxidase (PAP) per gram per 20 minutes
uCi/g org	microcuries per gram organism	ug PAP/g/30 mi	micrograms peroxidase-anti-peroxidase (PAP) per gram per 30 minutes
uCi/g soil	microcuries per gram soil	ug Pi/mg	micrograms Pi/milligram
uCi/kg	microcuries per kilogram	ug Pi/mg MIT	micrograms Pi/milligram mitochondria
uCi/mg	microcuries per milligram	ug POH/mg pro/m	micrograms phenol per milligrams protein per minute
uCi/ml	microcuries per millimeter	ug pro ld/ne	ug proteolipid per nerve pair
uCi/nmol	microcuries per nanomoles	ug TE/kg	micrograms Toxic Equivalent per kilogram
uCi/org	microcuries per organism	ug TEQ/kg bw/wk	micrograms Toxic Equivalency Concentration per kg bdwt per week
uCi/ug	microcuries per microgram	ug TTC/mg pro/h	micrograms triphenyl tetrazolium chloride reduced per milligram
uCi/ul	microcuries per microliter	ug/0.1 ml/d/org	micrograms per 0.1 milliliter per day per organism
ueq/l	microequivalents per liter	ug/0.5g	micrograms per 0.5 grams
ueq/g	microequivalents per gram	ug/10 g bdwt	micrograms per 10 grams body weight
ug	micrograms	ug/100g	micrograms per 100 grams
ug%	micrograms percent	ug/100 g bdwt	micrograms per 100 grams body weight
ug chl/cm2	micrograms chlorophyll per square centimeter		
ug chl/ mg leaf	micrograms chlorophyll per milligram of leaf		
ug CO2/g d sl/h	micrograms carbon dioxide per grams dry		

ug/100g/d	micrograms per 100 grams per day	ug/fish	day
ug/100g org/d	micrograms per 100 grams organism per day	ug/g	micrograms per gram
ug/100 mg	micrograms per 100 milligrams	ug/g/30 min	micrograms per gram per 30 minutes
ug/100 mg TI	micrograms per 100 milligram tissue	ug/g ash	micrograms per gram ash
ug/100mg/30mi	micrograms per 100 milligrams per 30 minutes	ug/g bdwt	micrograms per gram body weight
ug/100mg/h	micrograms per 100 milligrams per hour	ug/g bdwt/d	micrograms per gram body weight per day
ug/100ml	micrograms per 100 milliliters	ug/g bdwt/wk	micrograms per gram body weight per week
ug/100ml RBC	micrograms per 100 milliliters red blood cells	ug/g CREA	micrograms per gram creatinine
ug/200mg/20mi	micrograms per 200 milligrams per 20 minutes	ug/g dry cmpst	micrograms per gram dry compost
ug/200mg/30mi	micrograms per 200 milligrams per 30 minutes	ug/g dry wt	micrograms per gram dry weight
ug/24h	micrograms per 24 hours	ug/g d soil	micrograms per gram dry soil
ug/2.5 ul/h	micrograms per 2.5 microliters per hour	ug/d diet	micrograms per gram diet
ug/24h/org	micrograms per 24 hours per organism	ug/g food	micrograms per gram food
ug/ 4d	micrograms per 4 days	ug/g npro	micrograms per gram nonprotein
ug/50ul	micrograms per 50 microliters	ug/g om	micrograms per gram organic matter
ug/72h	micrograms per 72 hours	ug/g org	micrograms per gram organism
ug/500g	micrograms per 500 grams	ug/g org/d	micrograms per gram organism per day
ug/bee	micrograms per bee	ug/g org/wk	micrograms per gram organism per week
ug/cell	micrograms per cell	ug/g org x 1E2	micrograms per gram organism x 1E2
ug/cm2	micrograms per centimeter squared	ug/g pro	micrograms per gram protein
ug/cm2/d	micrograms per square centimeter per day	ug/g soil	micrograms per gram soil
ug/cm3	micrograms per cubic centimeter	ug/g tissue	micrograms per gram tissue
ug/d	micrograms per day	ug/g wet wt	micrograms per gram wet weight
ug/d/org	micrograms per day per organism	ug/g/d	micrograms per gram per day
ug/disk	micrograms per disk	ug/g/wk	micrograms per gram per week
ug/dl	micrograms per deciliter	ug/h/100 g	micrograms per hour per 100 grams
ug/dm3	micrograms per cubic decimeter	ug/h/100 ml	micrograms per hour per 100 milliliters
ug/egg	micrograms per egg	ug/kg	micrograms per kilogram
ug/em	micrograms per embryo	ug/kg bdwt	micrograms per kilogram body weight
ug/eu	micrograms per experimental unit	ug/kg bdwt/d	micrograms per kilogram body weight per day
ug/eu/d	micrograms per experimental unit per	ug/kg bdwt/wk	micrograms per kilogram body weight per week
		ug/kg/d	micrograms per kilogram per

day		ug/ul	micrograms per microliter
ug/kg/egg	micrograms per kilogram egg	ulU/ml	microliter International units per milliliter
ug/kg fd	micrograms per kilogram food	ul	microliter
ug/kg LD	micrograms per kilogram lipid	ul3	cubic microliters
ug/kg/wk	micrograms per kilogram per week	ul/100ml	microliter per 100 millimeter
ug/kg org	micrograms per kilogram organism	ul/20ml	microliter per 20 millimeter
ug/kg org/d	micrograms per kilogram organism per day	ul/beat	microliters per beat
		ul/beat/kg	microliters per beat per kilogram
		ul/cm2	microliter per square centimeter
ug/kg soil	micrograms per kilogram soil	ulCO2/50mgTI/10	microliters carbon dioxide per 50 milligrams tissue per 10 minutes
ug/kg TI	micrograms per kilograms tissue	ul Eq/ml	microliters equivalents per milliliter
ug/l	micrograms per liter	ul O2/g/h	microliters O2 per gram per hour
ug/l/d	micrograms per liter per day	ul O2/hr/g	microliters oxygen per hour per gram
ug/m3	micrograms per cubic meter	ul O2/mi/g	microliters oxygen per minute per gram
ug/mg	micrograms per milligram	ul/egg	microliters per egg
ug/mg food	micrograms per milligram food	ul/g	microliters per gram
ug/mg MIT	micrograms per milligram mitochondria	ul/g bdwt	microliters per gram body weight
ug/mg pro	micrograms per milligram protein	ul/g/d	microliters per gram per day
ug/mg pro/hr	micrograms per milligram protein per hour	ul/g/h	microliters per gram per hour
		ul/kg	microliters per kilograms
		ul/L	microliter per liter
		ul/ml	microliter per milliliter
ug/mg TI	micrograms per milligram tissue	ul/org	microliter per organism
ug/mi/mg pro	micrograms per minute per milligram protein	uM	micromolar
ug/min/ml	micrograms per minute per milliliter	um/s	micrometers per second
ug/ml	micrograms per milliliter	um2	micromoles squared
ug/ml H2O	micrograms per milliliter water	um3	cubic micromoles
ug/org	micrograms per organism	um3	cubic micrometers or cubic microns
ug/org/d	micrograms per organism per day	um3/cell	cubic micrometers per cell
ug/org/wk	micrograms per organism per week	uM/cm3	micromoles per squared centimeter
ug/sample	micrograms per sample	uM/h/l RBC	micromoles per hour per liter red blood cells
ug/tank/wk	micrograms per tank per week	um/g/30mi	micromoles per gram per 30 minutes
ug/TI	micrograms per tissue	uM/h/mg pro	micromolar per hour per milligram protein
		uM/kg	micromolar per kilogram
		uM/kg wght	micromolar per kilogram weight
		uM/l	micromolar (micromoles per

uM/mg pro	micromoles per milligram protein	umol CO2/g/s	micromoles CO2 per gram per second
uM/min/g	micromoles per minute per gram	umol CO2/g ch/s	micromoles carbon dioxide per gram chlorophyll per second
uM/ml	micromolar per milliliter	umol HA/mg pro	micromoles hippuric acid per milligram protein
um/TI	micromoles per tissue	umol GH/mgpro/m	micromoles reduced glutathione per milligram protein per minute
uM B-naph/h/ml	micromoles beta-naphthalene per hour per milliliter	umol NADPH/mg P	micromoles NADPH per milligram protein per minute
um B-naph/h/mgP	micromoles beta-naphthalene per hour per milligram protein	umol P/g/20 mi	micromol phosphorus per gram per 20 minutes
uM BAPNA/mi/mgP	micromoles of BAPNA (benzoylarginine-p-nitroanilide) inhibited per minute per milligram protein	umol P/g/h	micromoles phosphorus per gram per hour
uM BAPNA/mi/ml	micromoles of BAPNA (benzoylarginine-p-nitroanilide) inhibited per minute per milliliter	umol P/mg pro/h	micromoles phosphorus per milligram protein per hour
uM BTEE/mi/mgP	micromoles BTEE (N-benzyl-L-tyrosine ethyl ester) per minute per milligram protein	umol Pbg/h/g	micromoles of porphobilinogen per hour per gram tissue
uM P/g	micromoles Phosphorus per gram	umol Pi/mgp/30m	micromoles Pi per milligram protein per 30 minutes
uM SAPNA/mi/mgP	micromoles of SAPNA (succinyl-1-(ala)3-p-nitroanilide) inhibited per minute per milligram protein	umol Pi/mgpro/h	micromoles Pi per milligram protein per hour
uM SAPNA/mi/ml	micromoles of SAPNA (succinyl-1-(ala)3-p-nitroanilide) inhibited per minute per milliliter	umol pyv mg p/h	micromoles pyruvate per milligram protein per hour
uM TAME/mi/mgP	micromoles TAME (toluenesulfonyl-L-arginine methyl ester) per minute per milligram protein	umol/100g	micromoles per 100 grams
umol	micromoles	umol/100g org	micromoles per 100 grams organism
umol ASCA/mg pro	micromoles ascorbic acid per milligram protein	umol/100 ml	micromoles per 100 milliliters
umol C2H4/g/h	micromoles of ethylene produced per gram per hour	umol/10g/h	micromoles per 10 grams per hour
umol C2H4/org/h	micromoles of ethylene produced per organism per hour	umol/10mg/h	micromoles per 10 milligrams per hour
umol CO2/m2/s	micromoles CO2 per	umol/20mi/g	micromoles per 20 minutes per gram
		umol/dl/h	micromoles per decaliter per hour
		umol/dm3	micromoles per cubic decimeter
		umol/eu	micromoles per experimental unit
		umol/g	micromoles per gram
		umol/g ash	micromoles per gram ash
		umol/g pro/h	micromoles per gram protein per hour
		umol/g soil	micromoles per gram soil
		umol/g TI	micromole per gram tissue
		umol/g TI/h	micromoles per gram tissue per hour
		umol/g wet wt	micromoles per gram wet

weight			milligram per hour
umol/g/h	micromoles per gram per hour	umol/mg/mi	micromoles per milligram per minute
umol/g/mi	micromoles per gram per minute	umol/mi	micromoles per minute
umol/g/15 mi	micromoles per gram per 15 minutes	umol/mi/g	micromoles per minute per gram
umol/h/g pro	micromoles per hour per grams protein	umol/mi/g TI	micromoles per minute per gram of tissue
umol/h/g TI	micromoles per hour per gram tissue	umol/mi/h	micrograms per minute per hour
umol/h/TI	micromoles per hour per tissue	umol/mi/l	micromoles per minute per liter
umol/h/mg pro	micromoles per hour per milligram protein	umol/mi/mg	micromoles per minute per milligram
umol/h/mg TI	micromols per hour per milligram tissue	umol/mi/mg pro	micromoles per minute per milligram protein
umol/kg	micromoles per kilogram	umol/mi/ml	micromoles per minute per milliliter
umol/kg bdwt	micromoles per kilogram body weight	umol/ml/h	micromole per milliliter per hour
umol/kg egg	micromoles per kilogram egg	umol/ml/mi	micrograms per milliliter per minute
umol/kg media	micromoles per kilogram media	umol/TI	micromoles per tissue
umol/kg org	micromoles per kilogram organism	umoles/g TI/h	micromoles per gram tissue per hour
umol/l	micromoles per liter	umolNH3/1e+6c/h	micromoles NH3 per 1X10+6 cells per hour
umoles/l agar	micromoles per liter agar	units/100ml	units per 100 milliliters
umol/l RBC/mi	micromoles per liter red blood cells per minute	units/l	units per liter
umol/m	micromoles per meter	units/mg pro	units per milligram protein
umol/mg	micromoles per milligram	unit/mg pro/mi	enzyme unit per milligram protein per minute
umol/mg/15 mi	micromoles per milligram per 15 minutes	uu/mg	microunits per milligram
umol/mg/20	micromoles per milligram per 20 minutes	uU/ml	microunits per milliliter
umol/mg pro	micromoles per milligram protein	uu/mi/ml	microunits per minute per milliliter
umol/mgpro/20 mi	micromoles per milligram protein per 20 minutes	uu/ml	microunits per milliliter
umol/mgpro/30mi	micromoles per mg protein per 30 minutes	uV	microvolts
umol/mg pro/h	micromoles per milligram protein per hour	V	response value
umol/mg/h	micromoles per	V/N	response value per number of response sites
		V/quadrant	response value per quadrant
		v/v	volume per volume
		W units	Wrobleski units
		WER	water efficiency ratio
		wght/lit	weight per litter
		wk	week
		Wijs number	Wijs' number
		WO:LI	whole organism to liver ratio

[1/h]	[one per hour: use /h]	1e+3 org/acre	1 X 10+3 organisms per acre
[10x2/mm3]	[10x2 cubic millimeters:use /mm3]	1e+3 RA	1 X 10 +3 ratio
[10x3/mm3]	[10x3 cubic millimeters:use /mm3]	1e+3 sigma u/g	1 X 10+3 sigma units per gram
[10x6/ml3]	[10x6 cubic milliliters: use /mm3]	1e+3 um2	1 X 10 +3 square micrometers
[10x6/mm3]	[10x6 cubic millimeters:use /mm3]	1e+3RNA/TCA/DNA	1 X 10 +3 (counts per minute TCA per milligram RNA) per milligram DNA
[10x6/ul]	[10x6 microliters:use /ul]	1e+3/ml	1 X 10+3/milliliter
[10x9/l]	[10x9 liters:use /l]	1e+3/mm3	1 X 10+3/cubic millimeter
1mg/10ml	1 milligram per 10 milliliters	1e+3 no	1 x 10+3 number
1e+1 kg	1 x 10+1kilograms	1e+3 no/ul	1 x 10+3 number per microliter
1e+1 ug/g	1 X 10 +1 micrograms per gram	1e+3/ul	1 X 10+3/microliter
1e+2 cal/g	1 X 10 +2 calories per gram	1e+4 IU/g	1 X 10 +4 International units per gram
1e+2 no/mm2	1 x 10 +2 per square millimeter	1e+4 IU/TI	1 X 10 +4 International units per tissue
1e+2 no/mm3	1 X 10 +2 per cubic millimeter	1e+4 no/mg TI	1 x 10+4 number per milligram tissue
1e+2 ug/g	1 X 10 +2 micrograms per gram	1e+4 no/ml	1 X 10 +4 number per milliliter
1e+3 cell/mg TI	1 X 10 +3 cells per milligram tissue	1e+4 ug/g	1 x 10+4 micrograms per gram
1e+3 cells	1 X 10 +3 cells	1e+4 ug/TI	1 X 10+4 micrograms per tissue
1e+3 cells/mm3	1 X 10 +3 cells per cubic millimeter	1e+4/mm	1 x 10+4/millimeter
1e+3 cm/d	1 X 10 +3 centimeters per day	1e+4/mm3	1 x 10+4 per cubic millimeter
1e+3 counts	1 X 10 +3 counts	1e+12 no/L	1 X 10+12 number/liter
1e+3 cpm	1 X 10 +3 counts per minute	1e+5 no	1 X 10 +5 number
1e+3dpm/mg DNA	1 x 10+3 disintegrations per minute per milligram DNA	1e+5 no/g TI	1 X 10 +5 number per gram tissue
1e+3dpm/mg RNA	1 x 10+3 disintegrations per minute per milligram RNA	1e+6 cells	1 X 10 +6 cells
1e+3 dpm/TI	1 X 10 +3 disintegrations per minute per tissue	1e+6 cells/mm3	1 X 10 +6 cells per cubic millimeter
1e+3 no	1 X 10 +3 number	1e+6 cm	1 X 10 + 6 centimeters
1e+3 no/cm	1 X 10 +3 number per centimeter	1e+6 cpm	1 X 10 +6 counts per minute
1e+3 no/cm3	1 X 10 +3 number per cubic centimeter	1e+6 cpm/g TI	1 X 10 +6 counts per minute per gram tissue
1e+3 no/g TI	1 X 10 +3 number per gram tissue	1e+6/ml	1 X 10+6/milliliter
1e+3 no/mg SP	1 X 10 +3 number per milligram spleen	1e+6/mm3	1 X 10+6/cubic millimeter
		1e+6/ul	1 X 10+6/microliter
		1e+6 no	1 x 10+6 number
		1e+6 no/ml	1 X 10 +6 number per milliliter
		1e+6 no/ul	1 x 10+6 number per microliter
		1e+6 no/cm3	1 X 10 +6 number per cubic centimeter
		1e+6 no/g TI	1 x 10+6 number per gram

tissue		1e-7M	1 X 10 ⁻⁷ molar
1e+6 no/mg TI	1 X 10 ⁺⁶ number per milligram tissue		
1e+6 no/mm3	1 X 10 ⁺⁶ number per cubic millimeter		
1e+6 no/org	1 x 10 ⁺⁶ number per organism		
1e+7/ml sperm	1 X 10 ⁺⁷ cells per milliliter sperm		
1e+8/mm3	1 x 10 ⁺⁸ /cubic millimeters		
1e+8 no	1 x 10 ⁺⁸ number		
1e+9 no	1 X 10 ⁺⁹ number		
1e+9 no/l	1 X 10 ⁺⁹ number per liter		
1e+9 no/ml	1 X 10 ⁺⁹ number per milliliter		
1e-1 mg/mg/d	1 X 10 ⁻¹ milligrams per milligrams per day		
1e-2 mm	1 x 10 ⁻² millimeters		
1e-2 Nm	1 x 10 ⁻² nanometers		
1e-2 no/ul	1 X 10 ⁻² number per microliter		
1e-2 ug/g	1 X 10 ⁻² micrograms per gram		
1e-2 J/beat/kg	1 x 10 ⁻² Joules per beat per kilogram		
1e-3 cm/d	1 X 10 ⁻³ centimeters per day		
1e-3 cpm	1 x10 ⁻³ counts per minute		
1e-3*dyn*s*cm-5	1 X 10 ⁻³ X dynes X seconds X centimeters - 5		
1e-3 mg/mg/d	1 X 10 ⁻³ milligrams per milligrams per day		
1e-3 RA	1 X 10 ⁻³ molar		
1e-4dpm/g	1 x 10 ⁻⁴ disintegrations per minute per gram		
1e-4dpm/mg Pi	1 x 10 ⁻⁴ disintegrations per minute per milligram Pi		
1e-4 in	1 X 10 ⁻⁴ inches		
1e-4 no	1 X 10 ⁻⁴ number		
1e-5/mm3	1 X 10 ⁻⁵ /cubic millimeter		
1e-6 mol/mi/gTI	1 X 10 ⁻⁶ moles per minute per gram tissue		
1e-2M	1 X 10 ⁻² molar		
1e-3M	1 X 10 ⁻³ molar		
1e-4M	1 X 10 ⁻⁴ molar		
1e-5M	1 X 10 ⁻⁵ molar		
1e-6M	1 X 10 ⁻⁶ molar		

Appendix O. Ionic Fraction Codes

Actinium	Ac	Gallium	Ga	Protactinium	Pa
Aluminum	Al	Germanium	Ge	Radium	Ra
Americium	Am	Gold	Au	Radon	Rn
Ammonia		Hafnium	Hf	Rhenium	Re
(un-ionized)	NH ₃	Hydrogen Cyanide	HCN	Rhodium	Rh
Ammonium		Hydrogen sulfide ion	HS-	Rubidium	Rb
(total)	NH ₄	Helium	He	Ruthenium	Ru
Ammonium nitrate	NO ₃ N	Holmium	Ho	Samarium	Sm
Ammonium nitrite	NO ₂ N	Hydrogen	H	Scandium	Sc
Antimonate	SbO ₄	Indium	In	Selenate	SeO ₄
Antimony	Sb	Iodine	I	Selenite	SeO ₃
Argon	Ar	Iridium	Ir	Selenium	Se
Arsenate	ASO ₄	Iron	Fe	Silicate	SiO ₂
Arsenic	As	Krypton	Kr	Silicon	Si
Astatine	At	Lanthanum	La	Silver	Ag
Azide	N ₃	Lawrencium	Lr	Sodium	Na
Barium	Ba	Lead	Pb	Sodium Azide	NaN ₃
Berkelium	Bk	Lithium	Li	Strontium	Sr
Beryllium	Be	Lutetium	Lu	Sulfate	SO ₄
Bismuth	Bi	Magnesium	Mg	Sulfur	S
Borate	BO ₃	Manganate	MnO ₄	Tantalum	Ta
Borate	B ₂ O ₃	Manganese	Mn	Technetium	Tc
Boron	B	Mendelevium	Md	Tellurium	Te
Bromate	B ₄ O ₇	Mercury	Hg	Terbium	Tb
Bromate	BrO ₃	Methylmercury	MeHg	Thallium	Tl
Bromine	Br	Molybdenate	MoO ₄	Thiocyanate	SCN
Cadmium	Cd	Molybdenum	Mo	Thiosulfate	S ₂ O ₃
Calcium	Ca	Neodymium	Nd	Thorium	Th
Californium	Cf	Neon	Ne	Thulium	Tm
Carbon	C	Neptunium	Np	Tin	Sn
Cerium	Ce	Nickel	Ni	Titanium	Ti
Cesium	Cs	Niobium	Nb	Total Residual Bromine	TRBr
Chlorine	Cl	Nitrate	NO ₃ -	Total Residual Chlorine	TRCl
Chlorine produced oxidant		Nitrite	NO ₂	Total Residual Oxidant	TROX
	CPOX	Nitrogen	N	Triethyl lead	Pb ₃ E
Chlorate	ClO ₃	Nobelium	No	Tributyltin	TBT
Chlorite	ClO ₂	Not reported	NR	Tributyltin oxide	TBTO
Chromium	Cr	Osmium	Os	Tungstate	WO ₄
Chromate	Cr ₂ O ₇	Oxygen	O	Uranium	U
Chromate (+6)	CrVI	Palladium	Pd	Uranium oxide	
Cobalt	Co	Paraquat	PQT	(Uraninite)	UO ₂
Copper	Cu	Pentachlorophenol	PCP	Vanadium	V
Curium	Cm	Perchlorate	ClO ₄	Wolfram	W
Cyanide	CN	Phosphorus	P	Xenon	Xe
Dysprosium	Dy	Platinum	Pt	Ytterbium	Yb
Einsteinium	Es	Plutonium	Pu	Yttrium	Y
Erbium	Er	Polonium	Po	Zinc	Zn
Europium	Eu	Potassium	K	Zirconium	Z
Fermium	Fm	Praseodymium	Pr		
Fluorine	F	Promethium	Pm		
Francium	Fr				
Gadolinium	Gd				

Appendix P. Chemical Analysis Methods

Code	Definition	Description
M	Measured	Clearly states in the paper that the concentrations reported by the author were measured.
U	Unmeasured	Author clearly identifies that the concentrations are based on nominal values, or the author presents concentration information, but does not report information that chemical analysis was conducted.
NR	Not Reported	Author describes methods for analyzing chemical concentrations, but it is not clear that the values presented are based on measured or nominal concentrations.
X	Unmeasured (some measured values reported in article)	Author clearly identifies that some of the concentrations are based on nominal values while other concentrations are based on measured values, with the original nominal values also reported. Record the nominal values in the dose data field.

Appendix Q. Sample Unit Codes for Section V.5. Results Information

Code	Definition
AB	A bove ground portion (plants)
AD	A dult
BH	B oth male and female organisms exposed or observed
BR	B rood
C1	First Clutch
C2	Second Clutch
CC	C ocoons
CL	C ells
CB	Combs
CT	C ontainers
DC	D eceased organism
EG	E gg
EM	E mbryo
EU	E xperimental unit
F1	F 1 generation
F2	F 2 generation
F3	F 3 generation
F4	F4 generation
FET	Fetus
FB	Mature, full-bloom (fruit trees)
FF	F ields (as in agriculture)
FG	F emale g ametophyte
FL	F lower(s)
FM	F emale organisms

Code	Definition
FX	multiple generations
G1	females, 1 st generation
G2	females, 2 nd generation
G3	females, 3 rd generation
G4	females, 4th generation
G5	females, 5th generation
G6	females, 6th generation
GR	Grains
GS	Germinated seed
HC	Honey comb
HT	Hatchling
JV	Juvenile
KR	Kernal
LE	Leaf
LE1	1 st leaf
LE2	2 nd leaf
LE3	3 rd leaf
LE4	4 th leaf
LE5	5 th leaf
LE6	6 th leaf
LE7	7 th leaf
LE8	8 th leaf
LT	Litters
LV	Larvae
M1	males, 1 st generation

Code	Definition
M2	males, 2 nd generation
M3	males, 3 rd generation
M4	males, 4th generation
M5	males, 5 th generation
M6	males, 6 th generation
MD	M ature d ormant
MG	M ale g ametophyte
ML	M ale organisms
MT	M ature, no specified stage
MU	M ultiple
MX	males, multiple generations
NF	Non-pregnant females
NR	Applicable information about the organisms was N ot R eported
NT	N est
OR	O rganism
PB	Mature, p ost- b loom (fruit trees)
PF	Pregnant females
PH	Mature, p it- h ardening (fruit trees)
PL	P lots
PR	P air
RB	Mature r eproductive, 2nd generation
RC	Mature r eproductive, 3rd generation
RO	R oot
RP	Mature r eproductive
RS	R oot s egments

Code	Definition
SA	Subadult
SC	2nd generation (M2), no spec.stage
SD	Seed
SG	Mature, side-green (fruit trees)
SHL	Shell
SL	Seedling
SM	Samples
SV	Survivor
TC	Tissue culture callus
TU	Tubers
VC	Vegetative clone
VG	Mature vegetative

Appendix R. Effect Group Codes and Definitions

GROUP/EFFECT CODE(S)	DEFINITION
ACC/ACC	Accumulation: Effects, measurements and endpoints which characterize the process by which chemicals are taken into and stored in plants or animals. Includes lethal body burden.
BEH/AVO, BEH, FDB	Behavior: Overt activity of an organism represented by three <i>effect</i> groups - avoidance, general behavior, and feeding behavior. All measurements related to reproductive behavior are listed under the major effect group REP.
BCM/BCM, ENZ, HRM,	Biochemical: measurement of biotransformation or metabolism of chemical compounds, modes of toxic action, and biochemical responses in plants and animals including three <i>effect</i> groups - biochemical, enzyme and hormone effects.
CEL/CEL, GEN, HIS	Cellular Effects: measurements and endpoints regarding changes in structure and chemical composition of cells and tissues of plants or animals as related to their functions; the three <i>effect</i> groups include cellular, genetic and histological effects.
GRO/DVP, GRO, MPH	Growth: a broad category which encompasses measures of weight and length and includes effects on development, growth and morphology. Development covers toxicant effects on tissue organization in growing progeny. Growth represents length and weight changes at any point in the life cycle. Morphology measurements and endpoints address the structure (bones) and form (organ/tissue development) of an organism at any stage of its life history.
MOR/MOR	Mortality: measurements and endpoints where the cause of death is by direct action of the chemical.
PHY/INJ, IMM, ITX, PHY	Physiology: measurements and endpoints regarding basic activity in cells and tissues of plants or animals. Four <i>effect</i> groups include injury, immunity, intoxication and general physiological response.
POP/POP	Population: measurements and endpoints relating to a group of organisms or plants of the same species occupying the same area at a given time.
REP/ REP, AEG	Reproduction: measurements and endpoints to track the effect of toxicants on the reproductive cycle. All measurements related to reproduction and care of progeny are included in this category, including behavioral and physiological measurements. Measurements related to development of progeny are found under the major <i>effect</i> group GRO, minor <i>effect</i> group DVP. The <i>effect</i> group AEG includes measurements of avian or reptilian eggs.
SYS/PRS	Ecosystem: measurements and endpoints to track the effects of toxicants on ecosystem processes. Includes microbial processes.
NOC/NOC	No Group Code: measurements related to multiple or delayed effects or endpoints reported without a specific effect.

Appendix S. Group Effect, Effect and Measurement Codes and Definitions

Note: Codes in < > need maintenance and should not be used for coding at this time.

ACC ACCUMULATION GROUP			
ACC ACCUMULATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ASML	Assimilation of test chemical	The conversion of nutrient or chemical into the fluid or solid substance of the body, by the processes of digestion and absorption, whether in plants or animals.	http://cancerweb.ncl.ac.uk/omd/
<BDBN>	Body Burden	No definition available.	Should be coded as RSDE. If this measurement is associate with an endpoint, should be changed to LBCN or EBCN.
ELIM	Elimination	General term for loss or disappearance of a substance from an organism by either passive or active transport mechanism, e.g. diffusion and metabolic transformation.	
GACC	Accumulation, General	Used when more than one measurement is coded for an ACQUIRE record.	
LBCN	Lethal Body Concentration	Also Lethal Body Burden. The body residue of a chemical that is associated with mortality.	
RATO	Ratio	Ratio of accumulated substance between two response sites, but not the whole organism.	
<RCVY>	Recovery of Lead Shot	No definition available.	
RSDE	Residue	Amount of test chemical remaining in tissue after exposure. This includes body burden or body concentrations. This also includes autoradiography results.	
TSLC	Translocation	The conduction of the test substance from one part of an organism to another.	
UPTK	Uptake	The fraction of total available chemical in a medium (food, water) that is transferred to the organism (measured as the incoming - outgoing concentrations) OR a process by which materials are transferred into and onto an organism.	

BEH BEHAVIOR GROUP			
AVO AVOIDANCE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
CHEM	Chemical Avoidance	Avoidance or attraction to a chemical gradient.	
FOOD	Food Avoidance	Avoidance or attraction to a chemical gradient in food.	
GAVO	Avoidance, General	Unknown or multiple types of avoidance responses..	
STIM	Stimulus Avoidance	Avoidance or attraction to a stimulus.	
WATR	Water Avoidance	Avoidance or attraction to a chemical gradient in water.	
BEH BEHAVIOR EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ACTP	Accuracy of Learned Task, Performance	No definition available.	
ACTV	Activity, General	No definition available.	
ADOT	Adopt/adoption	Voluntary acceptance of the offspring of other parents to be as one's own offspring.	http://cancerweb.ncl.ac.uk/omd/
AGCL	Aggregation/Clumping	Grouped with the other organisms; aggregating in a group.	
AGGT	Aggression	Hostile, injurious, or destructive behavior or outlook especially when caused by frustration.	http://www.m-w.com/
ALRT	Alert	watchful and/OR prompt to meet danger	
APCH	Approach	To make advances to especially in order to create a desired result, to come very near to.	http://www.m-w.com/
ATCL	Antennal Cleaning	No definition available.	
ATSK	Acquired task	Ability to learn a new task.	
ATTK	Attack, attacking	To threaten with immediate injury or capture.	
BATH	Bathing	To wash in a liquid.	
BBBH	Burrow or Burial Behavior	No definition available.	
BITE	Bite or biting	To seize with the teeth.	

BEH BEHAVIOR EFFECT			
BOBB	Bobbing	To move up and down in a short quick movement.	
BOWW	Bow, bowing	To bend the head, body, or knee.	
BWAX	Bees Wax Produced	No definition available.	
CASE	Case Leaving Behavior	Change in number of organisms emerging from a casing.	
CMST	Compactness of Swimming Track	No definition available.	
CNBL	Cannibalism	Eating other individuals of one's own species.	http://cancerweb.ncl.ac.uk/omd/
COMA	Colony Maintenance (Bees)	No definition available.	
COMB	Comb Built	No definition available.	
CRDN	Coordination	Harmonious functioning of muscles or groups of muscles in the execution of movements.	http://www.m-w.com/
CRTP	Continual reinforcement task performed	Performance of a task under continual reinforcement.	
DHST	Diameter of Helix of Swimming Track	No definition available.	
DIGG	Dig/digging	To advance by removing or pushing aside material.	Webster's
DPLY	Displaying Behavior	No definition available.	
DRMT	Dormant, Adverse Condition Response	No definition available.	
DTCH	Ability to Detach from Substrate	Change in ability of an organism to detach from or attach to a substrate.	
DUMV	Diurnal movements	Movements made during the day.	
ECMB	Empty Combs	No definition available.	
EQU	Equilibrium	Change in ability to maintain balance.	
EXTN	Extinction	Time it takes for a behavior to cease	
FLHM	Flehmen response	the collection of pheromone signals through the curling of the upper lip during exploration of the oral and anogenital areas of other animals during social encounters	(http://www.hhmi.org/news/katz2.html)

BEH BEHAVIOR EFFECT			
FLIT	Flight	Behaviors include flag, evade, retreat, flee, freeze, defensive upright posture, defensive sideways posture and oblique.	ECOREF 58432
FLTR	Filtration Rate	Change in rate of filtration.	
FLYG	Flying Behavior	No definition available.	
FOOT	Foot Retraction	No definition available.	
F RTP	Fixed ratio task performed	A task performed under fixed ratio reinforcement.	
FRZG	Freezing Behavior	The act of stopping motion brought on by a stimulus.	
FTTR	Flutter	To move with quick wavering or flapping motions.	
GBHV	Behavioral Changes, General	Quantifiable change in activity including trained behavior.	
<GPRD>	Production, General	No definition available.	
GPST	Grip strength	The duration of hanging on thin wire or special apparatus with the fore and hind limbs	(http://www.oecd.org/dataoecd/38/46/34030071.pdf)
GRAB	Grab, grabbing	To take or seize by or as if by a sudden motion or grasp.	
GROM	Grooming	An animal's cleaning and caring for the body surface. This includes preening, the cleaning and oiling of feathers with the bill or of hair with the tongue.	http://cancerweb.ncl.ac.uk/omd/
HDLF	Head lift	Lifting of the head by an organism.	ECOTOX
HMVT	Horizontal movements	Movements from side to side or on the horizontal plane.	
HONY	Honey Produced	No definition available.	
INST	Sleeping Time, Induced	No definition available.	
JUMP	Jumping	To spring into the air : leap; especially : to spring free from the ground or other base by the muscular action of feet and legs.	http://www.m-w.com/
KILL	Kill	One organism killing another organism.	
LOCO	Distance Moved, Change in Direct Movement	Quantifiable change in direct movement .	

BEH BEHAVIOR EFFECT			
MIGR	Migration	Quantifiable change in migration behavior.	
MOTL	Motility	The ability to move spontaneously.	http://cancerweb.ncl.ac.uk/omd/
NACT	Non-social activity	Behaviors include explore, scan, dig, push-dig, wash, self-groom, scratch, jump and eat.	ECOREF 58432
NCMV	Nocturnal movements	Movements made during the night.	
NMVM	Movements, Number of	No definition available.	
NRES	No response	No response to the toxicant.	
NRGX	Negative geotaxis reflex	The time to turn 180 degrees when placed head downward on an inclined plane.	http://www.oecd.org/dataoecd/38/46/34030071.pdf
NVOC	Vocalizations, Number of	No definition available.	
ORNT	Orientation	To set or arrange in any determinate position especially in relation to the points of the compass.	
PALR	Palmar grasp	Ability to grasp with the palm of a hand.	
PHTR	Phototactic Response	Attraction to or avoidance of light.	
PLAR	Placing reflex	Flexion followed by extension of the leg.	Dorlands Medical Dictionary
POLC	Pollen collected	Collection of a mass of microspores in a seed plant appearing usually as a fine dust.	Webster's
POST	Posture	The position of the limbs or the carriage of the body as a whole.	http://cancerweb.ncl.ac.uk/omd/
PNPY	Prey penetration	The penetration of a pest into a plant root system.	
PRVU	Predator Vulnerability	Quantifiable change in ability to avoid or escape capture.	
REST	Rest	A state of motionlessness or inactivity or a bodily state characterized by minimal functional and metabolic activities.	http://www.m-w.com/
RRSP	Righting Response	No definition available.	

BEH BEHAVIOR EFFECT			
RSNR	Resting and not ruminating	Lying down and not chewing cud.	
RSPT	Response Time to a Stimulus	No definition available.	
RSRU	Resting and ruminating	Lying down and chewing cud.	
RUBB	Rub	To move along the surface of a body with pressure.	
RVSE	Reversals	To turn completely about in position or direction.	http://www.m-w.com/
SACT	Social Activity	Behaviors include attend, nose, groom, sniff, investigate, follow, push-under, push-past, crawl-over and crouch.	ECOREF 58432
SCRT	Scratch	to scrape, dig, rub, tear or mark a surface of with something sharp or jagged such as claws or nails	(Websters)
SDNR	Standing and not ruminating	Standing and not chewing cud.	
SDRU	Standing and ruminating	Standing and chewing cud.	
SEBH	Search/explore behavior	An active movement by which an organism seek resources.	http://www.colostate.edu/Depts/Entomology/courses/en507/student_papers_1995/bradbury.html
SLEP	Sleep/Sleeping	The natural periodic suspension of consciousness during which the powers of the body are restored.	Webster's
SMEL	Smell/Sniff	To perceive the odor or scent of through stimuli affecting the olfactory nerves.	Webster's
SRCH	Stretch	To enlarge or distend especially by force.	Webster's
SRED	Spread, Spreading	To stretch out.	
STLT	Startle	To frighten or surprise suddenly.	Webster's
STPY	Stereotypy	Frequent almost mechanical repetition of the same posture, movement, or form of speech (as in schizophrenia).	http://www.m-w.com/
STRS	Observed Stress	Observed physiological tension or irritation in animals or plants.	
SURF	Surfacing	No definition available.	

BEH BEHAVIOR EFFECT			
SWIM	Swimming	No definition available.	
THML	Temperature Tolerance	Change in tolerance to temperature change.	
VACL	Valve Closure	Change in the ability to open or close a shell valve upon mechanical stimulation and/or gaping response.	
VCLF	Visual Cliff	No definition available.	
VIBR	Vibrissae placing	A sensorimotor reflex. The vibrissae (hair), but not the skin, is manipulated and invokes a reflex response.	
VISP	Visual placing	The reaction of an organism in response to a visual stimuli. For example: The fast movement of a finger towards a mouse normally elicits an immediate reaction from the mouse. In addition, the mouse is held a few centimeters above a grid (a wire mouse cage top) and should extend its front limbs in an attempt to grasp the grid. This response is known as visual placing.	http://cmhd.mshri.on.ca/pdf
VMVT	Vertical or rearing movements	To rise up on the hind legs.	http://www.m-w.com/
WTCH	Watch, watching	To keep something under close observation.	
YAWN	Yawn	To open the mouth wide usually as an involuntary reaction to fatigue or boredom.	Webster's
FDB FEEDING BEHAVIOR EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
BGNG	Begging Behavior	No definition available.	
FCNS	Food Consumption (Amount or Rate)	No definition available.	
FDNG	Feeding Behavior (Activity)	No definition available.	
FECL	Fecal Production	No definition available.	
FEFF	Feeding Efficiency	No definition available.	
FSTR	Food Storage	No definition available.	
FTIM	Feeding Time	No definition available.	

GFDB	Feeding Behavior, General	No definition available.	
LTBD	Litter Breakdown	No definition available.	
PRBE	Predatory Behavior	Change in ability to seek and capture prey.	
STRK	Strikes	Number of times food source was hit.	
WCON	Water Consumption	No definition available.	

BCM BIOCHEMICAL GROUP

BCM BIOCHEMICAL EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
1HPY	1-Hydroxypyrene	Main metabolite compound of polycyclic aromatic hydrocarbons with four to six rings.	ECOREF#50442
25HC	25-Hydroxycholecalciferol	A 3,25-diol; the first step in the biological conversion of vitamin D3 to the more active form, calcitriol; it is more potent than vitamin D3. Synonym: calcidiol, calcifediol.	http://cancerweb.ncl.ac.uk/omd/
3MDO	3-Methoxytyramine to Dopamine ratio	The ratio of 3-Methoxytyramine to Dopamine (ECOTOX)	
3MTA	3-Methoxytyramine	A metabolite of dopamine	
4ORA	4-Oxo-retinoic acid	An oxidative metabolite of retinoic acid. A highly active endogenous active retinoid.	http://www.niwi.knaw.nl/elecpubl/iwmo/niob/niobb.htm
5HAA	5-Hydroxyindole Acetic Acid	A product of serotonin metabolism excreted by patients with carcinoid tumors. (5-HIAA)	
5HSR	5-Hydroxyindole Acetic Acid to Serotonin ratio	The ratio of 5-Hydroxyindole Acetic Acid to Serotonin (ECOTOX)	
8ODG	8-hydroxydeoxyguanosine	A biomarker of oxidative stress on DNA (ECOREF#76203)	

BCM BIOCHEMICAL EFFECT			
AABA	Alpha-aminobutyric Acid	Inhibitory amino acid - alpha form of GABA.	
AAIB	A-Aminoisobutyrate	A group of compounds that are derivatives of the amino acid 2-amino-2-methylpropanoic acid.	http://cancerweb.ncl.ac.uk/omd/
ABPT	Androgen binding protein	A protein secreted by testicular Sertoli cells along with inhibin and mullerian inhibiting substance. Androgen binding protein probably maintains a high concentration of androgen in the seminiferous tubules.	http://cancerweb.ncl.ac.uk/omd/
ACAR	alpha-Carotene	One of several orange or red crystalline hydrocarbon pigments C ₄₀ H ₅₆ that occur in the chromoplasts of plants and in the fatty tissues of plant-eating animals and are convertible to vitamin A.	
ACHL	Acetylcholine	A reversible acetic acid ester of choline, and a cholinergic agonist serving as a neurotransmitter (ACh).	
ACHP	Acid-soluble hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing age.	
ACID	Acid Produced	No definition available.	
ACRR	Acetylene Reduction Rate/plant Roots Nodulated	No definition available.	
ACTN	Actin	A muscle protein that is the chief constituent of the Z-band myofilaments of each sarcomere.	
ACTR	delta Aminolevulinic acid creatine ratio	The ratio of delta Aminolevulinic acid to creatine in a sample	
ADNY	Adenvlate	An enzyme that catalyzes the formation of cyclic AMP from ATP.	http://www.m-w.com/
ADOX	Adenosine diphosphate to oxygen ratio	The ratio of adenosine diphosphate to oxygen.	

BCM BIOCHEMICAL EFFECT			
ADPT	Adenosine diphosphate (ADP)	A neucleotide, the 5'-pyrophosphate of adenosine, involved in energy metabolism. It is produced by hydrolysis of ATP and converted back to ATP by the process of oxidative phosphorylation and substrate phosphorylation.	
AGLB	alpha-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	http://cancerweb.ncl.ac.uk/omd/
AGPT	alpha-glycerophosphate	A salt or ester of either of the glycerophosphoric acids.	
AIHP	Acid-insoluble hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing agent.	
AION	Anions	Negatively charged atoms or radicals.	http://cancerweb.ncl.ac.uk/omd/
ALAN	Alanine	A neutral amino acid occurring in two forms alpha and beta.	
ALBE	Albumen Energy	Albumin - any protein that is soluble in water and moderately concentrated salt soln, and is coagulable by heat.	
ALBM	Albumin	Any of numerous simple heat-coagulable water-soluble proteins that occur in blood plasma or serum, muscle, the whites of eggs, milk, and other animal substances and in many plant tissues and fluids.	Webster's
ALCO	Aluminum Content	The concentration of aluminum found in a sample.	
ALGL	Albumin:Globulin ratio	The ratio of Albumin to Globulin in a sample.	
ALLA	Allantoin	A crystallizable oxidation product of uric acid found in allantoinic and amniotic fluids and in fetal urine.	
ALLT	Allantoic Acid	A crystallizable acid obtained by hydrolysis of allantoin; intermediate product in nucleic acid metabolism.	
AMAC	Amino Acid(s), General Term	Any organic comp containing an amino and a carboxyl group.	

BCM BIOCHEMICAL EFFECT			
AMAN	Amino Acid Nitrogen	The nitrogen associated with the amino acids in the body.	
AMMO	Ammonia	A colorless alkaline gas.	
AMNH	P-amino Hippurate	A salt of aminohippuric acid, the glycine conjugate of amniobenzoic acid, salt is used to measure the effective renal plasma flow and to determine the functional capacity of the tubular excretory mechanism (PAH or PAHA).	
AMNN	Amino Nitrogen	Nitrogen combined with hydrogen in the amino group. Also known as ammonia nitrogen.	
AMPT	Adenosine monophosphate (AMP)	A nucleotide, the 5'-phosphate of adenosine, involved in energy metabolism. It is produced by hydrolysis of ATP and converted back to ADP by adenylate kinase. Also called adenylic acid.	
AMYD	Amyloid	A glycoprotein deposited extracellularly in tissues in amyloidosis.	(http://cancerweb.ncl.ac.uk/)
ANTH	Anthocyanins	Any of the intensely colored, sap-soluble glycoside plant pigments responsible for most scarlet, purple, mauve, and blue coloring in higher plants.	
ANTC	Anthocyanin	A blue, purple or red, accessory pigment found in plants. Anthocyanins are water-soluble glucosides that are not directly involved in photosynthesis and can mask the green of chlorophyll giving the plant a red purple color.	http://cancerweb.ncl.ac.uk/omd/
<AOCN>	Arterial Oxygen Content	No definition available.	Use OCON as measurement and response site ART
APCY	Allophycocyanin	Allophycocyanin (APC) is a large protein (approximate molecular weight 80 kd) containing many fluorophores.	http://www.drmmr.com/abcon/APC.html
APHT	Alkaline phosphate	No definition available.	
APRO	alpha-Proteins	Protein: Any of a group of complex organic compounds which contain carbon, hydrogen, oxygen, nitrogen and usually sulfur, the characteristic element being nitrogen and which are widely distributed in plants and animals.	

BCM BIOCHEMICAL EFFECT			
ARCH	arachidonate	An essential unsaturated fatty acid that humans use to synthesize regulatory molecules such as prostaglandins and thromboxanes. It is found in fatty animal tissue such as egg yolk and liver.	
ARGI	Arginine	An amino acid, produced by hydrolysis of proteins.	
ASBT	Ascorbate	A salt or ester of ascorbic acid.	http://cancerweb.ncl.ac.uk/omd/
ASCA	Ascorbic Acid	Vitamin C. A white, crystalline, water-soluble vitamin found in many plant materials, especially citrus fruit.	
ASCN	Arsenic to creatinine ratio	The ratio of arsenic to creatinine.	
ASCO	Arsenic content	The concentration of arsenic found in a sample.	
ASHC	Ash Content	The mass of incombustible material remaining after burning a given coal sample as a percentage of the original mass of coal.	
ASPA	Aspartate	A salt of aspartic acid - a nonessential amino acid occurring in proteins.	
ASPR	Asparagine	A nonessential amino acid that is the beta-amide of aspartic acid. It is found in most plants, and has diuretic properties. It is used as a culture medium for certain bacteria.	Dorlands Medical Dictionary
ATCO	alpha-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
ATPT	Adenosine Triphosphate	(ATP) A coenzyme composed of adenosinediphosphate with an additional phosphate group; an important energy compound in metabolism.	
ATRA	all-trans-retinoic acid	A form of vitamin A and a drug used for the treatment of acute promyelocytic leukemia.	http://en.wikipedia.org/wiki/All-trans_retinoic_acid
7BRF	7-Benzyloxyoxyresorufin	No definition available.	
B2MG	beta2-Microglobulin	A small, nonpolymorphic protein, homologous to the C3 domain of IgG, that is one subunit of class I major histocompatibility antigens.	
BACO	Barium content	The concentration of barium found in a sample.	

BCM BIOCHEMICAL EFFECT			
BAGA	Bisphenol A glucuronic acid	A major degradation product of bisphenol A subjected to renal excretion.	ECOREF 60614
BCAR	beta-Carotene	One of several orange or red crystalline hydrocarbon pigments C ₄₀ H ₅₆ that occur in the chromoplasts of plants and in the fatty tissues of plant-eating animals and are convertible to vitamin A.	
BCON	Boron Content	The concentration of boron found in a sample.	
BFCO	Bromoform concentration	A colorless liquid, slightly soluble in water; used in the separation of minerals.	
BGLB	beta-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	http://cancerweb.ncl.ac.uk/omd/
BGPR	beta- and gamma-Protein	Protein: Any of a group of complex organic compounds which contain carbon, hydrogen, oxygen, nitrogen and usually sulfur, the characteristic element being nitrogen and which are widely distributed in plants and animals.	
BHNC	Behenic Acid	A constituent of most fats and fish oils; large amounts are found in jamba, mustard seed, rapeseed oils, and cerebrosides.	http://cancerweb.ncl.ac.uk/omd/
BIOT	Biotin Content	Biotin - structure identical to vitamin H and coenzyme R; ubiquitous member of the Vitamin B complex required by or occurring in all forms of life.	
BLAC	Bile Acids	Steroid acids found in bile; e.g., taurocholic and glycocholic acid's, used when biliary secretion is inadequate and for biliary colic. Their physiological roles include fat emulsification. Their synthesis is reduced in disorders of the peroxisomes.	http://cancerweb.ncl.ac.uk/omd
BLLB	Bilirubin	A reddish yellow pigment C ₃₃ H ₃₆ N ₄ O ₆ that occurs especially in bile and blood and causes jaundice if accumulated in excess.	http://www.m-w.com/
BPHY	b-phycoerythrin	A protein.	
<BUNT>	Blood Urea Nitrogen	Nitrogen attached to urea which is a waste product of protein metabolism. Measured to assess kidney function.	
C4CD	C4 acids	Initial product of photosynthesis.	
C9BT	Total 9b,19-cyclopropylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility	

BCM BIOCHEMICAL EFFECT			
CACO	Calcium Content	Found in nearly all organized tissues	
CAAL	Calcium to aluminum Ratio	The ratio of the amount of calcium to aluminum in an organism or organism's parts.	
CAMP	Adenosine 3',5'-cyclic Monophosphate	A key regulator which acts to control the rate of a number of cellular processes in bacteria, most animals, and some higher plants.	
CANA	Calcium to sodium ratio	Ratio of calcium to sodium in an organism or organism's tissues.	
CAPH	Calcium/Phosphorus Ratio	Calcium and phosphorus form Calcium phosphate, the dense hard material found in teeth and bones	
CARB	Carbohydrate	An aldehyde or ketone derivative of a polydric alcohols, including starches, sugars, celluloses and burns.	
CARC	Carotenoid Content	Isomeric pigments having colors from violet to yellow.	
CARO	Carotene	Any of several red, crystalline carotenoid hydrocarbon pigments occurring widely in nature, convertible in the animal body to Vitamin A.	
CAZN	Calcium to Zinc Ratio	Ratio of calcium to zinc in an organism or organism's tissues.	
CCON	Carbon Content	The concentration of carbon found in a sample.	
CCTR	Coproporphyrin creatine ratio	The ratio of Coproporphyrin to creatine in a sample.	ECOTOX
CDAI	Cadmium Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
CDCO	Cadmium Content	The concentration of cadmium found in a sample.	
CDST	acid soluble thiol	No definition available.	
CDPR	Cadmium to Phosphorus ratio	The ratio of cadmium to phosphorus.	
CDZN	Cadmium to Zinc Ratio	The ratio of cadmium to zinc.	
CERO	Ceruloplasmin	A blue copper containing dehydrogenase protein (135 kD) found in serum (200-500_g/ml) that is apparently involved in copper detoxification and storage and possibly also in mopping up excess oxygen radicals or superoxide anions.	http://cancerweb.ncl.ac.uk/omd/

BCM BIOCHEMICAL EFFECT			
CGMP	Cyclic guanylic acid, cGMP	3',5' cyclic ester of guanylic acid. A second messenger generated by guanylyl cyclase and is a major component of ribonucleic acids.	http://cancerweb.ncl.ac.uk/omd/
CHAB	Chlorophyll A:Chlorophyll B	The ratio of Chlorophyll A and Chlorophyll B found in a sample.	ECOTOX staff
CHCT	Chlorophyll:Carot enoids	The ratio of chlorophyll to carotenoids in a sample	ECOTOX staff
CHES	Cholesteryl ester	Esterified cholesterol.	ECOREF 67751
CHLA	Chlorophyll 'A' Concentration	Pigment found in photosynthetic cells; occurs in all organisms exhibiting aerobic photosynthesis.	
CHLB	Chlorophyll 'B' Concentration	Pigment found in photosynthetic cells; occurs in all higher plants.	
CHLC	Chlorophyll C concentration	Any of a group of green magnesium-containing porphyrin derivatives occurring in all photosynthetic organisms. Chlorophylls act as respiratory pigments, converting light energy to reducing potential. Chlorophyll C occurs in diatoms and brown algae.	
CHLN	Choline	Considered to be a vitamin of the B complex, found in many animal and plant tissues.	
CHLO	Chlorophyll, General	Pigment found in photosynthetic cells. Measurable change in chlorophyll content including chlorophyll content, chlorosis.	
CHLR	Chloride	Salt of hydrochloric acid; any binary comp of chlorine.	
CHOL	Cholesterol	A pearly, fatlike steroid alcohol, found in animal fats and oils, bile, blood, brain tissues, milk, egg yolk, myelin sheath, liver, kidneys and adrenal gland - precursor to Steroids and sex hormones.	
CHYM	Chymotrypsinogen	An inactive proteolytic enzyme of pancreatic juice; converted to the active form, chymotrysin, by trypsin.	
CITA	Citric acid	An important intermediate in the citric acid cycle which breaks down glucose into water and carbon dioxide when oxygen is present.	http://cancerweb.ncl.ac.uk/omd/
CLCO	Chlorine concentration	The concentration of chlorine found in a sample.	
CLLG	Collagen	The protein substance of the white fibers (collagenous fibers) of skin, tendon, bone, cartilage and all other connective tissue, composed of molecules of tropocollagen, it is converted into gelatin by boiling. Collagenous pertaining to collagen, forming or producing collagen.	http://cancerweb.ncl.ac.uk/omd/

BCM BIOCHEMICAL EFFECT			
CLMD	Calmodulin	A calcium binding protein with four EF hand binding sites for calcium.	
CMPH	Camphor Concentration	The concentration of camphor found in a sample.	
CMYS	Chymotrypsin	Serine proteases from pancreas. Preferentially hydrolyze Phe, Tyr or Trp peptide and ester bonds.	http://cancerweb.ncl.ac.uk/omd/
CNRA	Carbon to Nitrogen Ratio	No definition available.	
CO2C	Carbon Dioxide Content	The concentration of carbon dioxide found in a sample.	
COAN	Chlorpyrifos-o-analog	A metabolite of the chemical Chlorpyrifos.	
COCO	Cobalt Content	The concentration of cobalt found in a sample.	
CODR	9-cis-4-oxo-13,14-dihydro-retinoic acid	A recently discovered retinoic acid metabolite.	ECOTOX 80509
CP2K	Cytochrome P2K (CYP 2K)	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P2K = pigment 2K	
CP3K	Cytochrome P3K (CYP 3K)	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P3K = pigment 3K.	
CPRP	Coproporphyrin	Produced by oxidation of the methylene bridges in coproporphrynogen - an intermediate in the formation of heme; coproporphyrin III is excreted in the feces in hereditary coproporphyria.	
CRBR	Cerebroside	Glycolipid found in brain (11% of dry matter). Sphingosine core with fatty amide or hydroxy fatty amide and a single monosaccharide on the alcohol group (either glucose or galactose).	http://cancerweb.ncl.ac.uk/omd/
CRCO	Chromium content	The concentration of chromium found in a sample.	
CREA	Creatinine	Anhydride of creatine; found in muscle and blood and excreted in the urine.	

BCM BIOCHEMICAL EFFECT			
CRLP	Ceruloplasmin	A blue copper containing dehydrogenase protein (135 kD) found in serum (200-500 _g/ml) that is apparently involved in copper detoxification and storage and possibly also in mopping up excess oxygen radicals or superoxide anions.	http://cancerweb.ncl.ac.uk/omd/
CRMD	Ceramide	An N-acyl sphingosine, the lipid moiety of glycosphingolipids.	
CRPR	Chromium to Phosphorus Ratio	No definition available.	
CRTN	Creatine	A compound which is made by the body and is used to store energy in the form of phosphate molecules.	http://cancerweb.ncl.ac.uk/omd/
CUAI	Copper Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
CUCD	Copper to Cadmium ratio	The ratio of copper to cadmium.	
CUCR	Copper to Carbon ratio	The ratio of copper to carbon in a sample.	
CYCB	Cytochalasin B	A group of fungal metabolites that inhibit the addition of G actin to a nucleation site and therefore perturb labile microfilament arrays. Cytochalasin B inhibits at around 1 microgram/ml but at about 5 _g/ml begins to inhibit glucose transport. Cytochalasin D affects only the microfilament system and is therefore preferable.	http://cancerweb.ncl.ac.uk/
CYTN	Cysteine	A crystalline sulfur-containing amino acid $C_3H_7NO_2S$ readily oxidizable to cystine.	
CYSI	Cystine	The amino acid formed by linking two cysteine residues with a disulfide linkage between the two SH groups. The analogous compound present within proteins is termed two half cysteines.	
CUCO	Copper Content	Metal; is essential in nutrition, component of various proteins.	
CUMN	Copper to Manganese Ratio	No definition available.	
CUMO	Copper to molybdenum ratio	Ratio of copper to molybdenum in an organism or organism's tissues.	

BCM BIOCHEMICAL EFFECT			
CUZN	Copper to Zinc Ratio	No definition available.	
<D44T>	Total 4,4 Dimethylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
DABT	Dehydroascorbate	A salt or ester of dehydroascorbic acid.	http://cancerweb.ncl.ac.uk/omd/
DALA	delta-Aminolevulinic acid	The delta-aminolevulinic acid (pronounce) synthase (ALA synthase) reaction occurs in the mitochondria. The product of the reaction, ALA, diffuses into the cytoplasm, where the next several steps of heme synthesis occur.	http://medlib.med.utah.edu/NetBiochem/hi31.htm
DASC	Dehydroascorbic acid	L-threo-2,3-hexodiulosonic acid gamma-lactone. The reversibly oxidized form of ascorbic acid. It is the lactone of 2,3-diketogulonic acid and has antiscorbutic activity in man on oral ingestion.	http://cancerweb.ncl.ac.uk/omd/
DCDA	3,4-Dihydroxyphenyl acetic acid to Dopamine ratio	The ratio of 3,4-Dihydroxyphenylacetic acid to Dopamine.	ECOTOX
DDEC	DDE concentration	The concentration of DDE in tissue	
DDRP	Didehydroretinyl palmitate	A vitamin.	
DGDG	Digalactosyl Diglyceride (Glycolipid)	Glycolipid - lipid containing carbohydrate groups, usually galactose. The simplest are the glycodiacylglycerols.	
<DI4T>	Total 4-dimethylsterols	No definition available.	
DHAP	Dihydroxyacetone-P	No definition available.	
DHCA	1,25-Dihydrocholecalciferol (also Calcitriol)	The form of vitamin D3 that is biologically active in intestinal transport and calcium resorption by bone.	http://cancerweb.ncl.ac.uk/omd/
DHRT	Dehydroretinol (Vitamin A2)	3-Dehydroretinol; retinol with an additional double bond in the 3-4 position of the cyclohexane ring. It is also called vitamin A2. Also known as Didehydroretinol.	http://cancerweb.ncl.ac.uk/omd/

BCM BIOCHEMICAL EFFECT			
DISC	Diethylsuccinate Hydrolysis	No definition available.	
DOPC	3,4-Dihydroxyphenyl acetic acid	A metabolite of dopamine.	
DPHZ	1, 1-Diphenyl-2-picryl hydrazyl	No definition available.	
DPPA	2,3-diphosphoglyceric acid	A by- product of glycolysis can bind with hemoglobin.	http://www.hhp.ufl.edu/classes/ess/Spring/Pet3351jd/pdf3351/3351Chapter10.PDF
DRYM	Dry matter	All soluble and insoluble organic substances and inorganic substances present in a sample except for water.	www.florafood.com/common/documents/alidefpar.pdf
DSMN	Desmosine	Component of elastin, formed from four side chains of lysine and constituting a cross linkage.	http://cancerweb.ncl.ac.uk/omd/
DTBL	Direct Bilirubin (Conjugated)	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
ECCR	Echinochrome	A quinone, echinochrome, is the red coloring matter in sea urchins and sand dollars.	
ECSP	Eicosapentaenoate	A fatty acid.	
EICN	Ethyl isocyanide	Bound ethyl isocyanide serves as a structural model for the transition state of the NO-induced oxidation reaction.	phillips-lab.biochem.wisc.edu
ELST	Elastin	Glycoprotein (70 kD) randomly coiled and cross linked to form elastic fibers that are found in connective tissue. Like collagen, the amino acid composition is unusual with 30% of residues being glycine and with a high proline content. Cross linking depends upon formation of desmosine from four lysine side groups. The mechanical properties of elastin are poorer in old animals.	http://cancerweb.ncl.ac.uk/omd/
ELYT	Electrolytes	A chemical compound which when molten or dissolved in certain solvents, usually water, will conduct an electrical current.	

BCM BIOCHEMICAL EFFECT			
ENKP	Enkephalins	Natural opiate pentapeptides isolated originally from pig brain. Leu enkephalin (YGGFL) and Met enkephalin (YGGFM) bind particularly strongly to _ type opiate receptors.	http://cancerweb.ncl.ac.uk/omd/
EPNP	O-Ethyl-O-p-nitrophenylbenzenethionophosphate	The amount of O-Ethyl-O-p-nitrophenylbenzenethionophosphate contained within a response site.	
ERUC	Erucic Acid	A monoethenoid acid that is the cis isomer of brassidic acid and makes up 40 to 50% of the total fatty acid in rapeseed, wallflower seed, and mustard seed.	
ESAA	Amino Acids, Essential	Amino acids required for protein synthesis that cannot be synthesized by the organism and therefore must be maintained in the diet.	
ETCO	epsilon-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
ETSR	Erythrocyte sedimentation rate	A test that measures the rate at which red blood cells settle through a column of liquid. A non-specific index of inflammation.	http://cancerweb.ncl.ac.uk/omd/
7ERF	7-Ethoxyresorufin	No definition available.	
ETHL	Ethylene	A colorless, flammable gas with a sweet taste and odor.	
FAME	Fatty Acid Methyl Ester	No definition available.	
FATL	Fatty acid, total	Total amount of fatty acids .Any number of saturated aliphatic monocarboxylic acids. A metabolic byproduct from the breakdown of fats. Chemically R COOH where R is an aliphatic moiety.	
FBNT	Fibronectin	A large glycoprotein found on the surface of cells and mediates cellular adhesion, control of cell shape and cell migration.	
FBRG	Fibrinogen	Soluble plasma protein (340 kD, 46 nm long), composed of 6 peptide chains.	http://cancerweb.ncl.ac.uk/omd/
FEAI	Iron Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	

BCM BIOCHEMICAL EFFECT			
FEMN	Iron to Manganese Ratio	No definition available.	
FENR	Fenretinide (4-Hydroxy-retinoic acid)	A Vitamin-A derivative. A synthetic retinoid. It is an effective as an antineoplastic agent.	http://cancerweb.ncl.ac.uk/omd/
FEZN	Iron to zinc ratio	No definition available.	
FFTA	Fatty Acids, Free or Nonesterified	Straight chained monocarboxylic acid, that are nonesterified; the fraction of plasma fatty acids that are not in the form of glycerol; transported complexed with albumin.	
FIBR	Fiber	Amount of fiber from a diet.	
FLRS	Fluorescence	Property of emitting light while exposed to light, the emitted light having a wavelength only slightly longer than that of the light absorbed	Used for algae or other organisms that naturally fluoresce, may be used to measure chlorophyll or population growth rate. For example, if it is specifically stated that fluorescence is used to measure chlorophyll A, code the measurement as CHLA.
FRCT	Fructose	A 6 carbon sugar (hexose) abundant in plants. Fructose has its reducing group (carbonyl) at C2 and thus is a ketose, in contrast to glucose that has its carbonyl at C1 and thus an aldose. Sucrose, common table sugar, is the non-reducing disaccharide formed by an alpha linkage from C1 of glucose to C2 of fructose (latter in furanose form). Fructose is a component of polysaccharides such as insulin, levan.	http://cancerweb.ncl.ac.uk/omd/
FSPP	Female specific proteins	Proteins that only appear in female hemolymph during oocyte maturation.	http://biotech.korea.ac.kr/member/kimhr/17.pdf

BCM BIOCHEMICAL EFFECT			
FTIX	free thyroxine index	An arbitrary value obtained by multiplying the triiodothyronine uptake by the serum thyroxine concentration; it largely corrects for variations in thyroid-bound globulin concentration by providing a clinically valid estimate of the physiologically active free thyroxine; direct assay or laboratory measurement of free serum thyroxine yields a more accurate value.	http://cancerweb.ncl.ac.uk/omd/
GABA	gamma-Aminobutyric acid	Thought to be a central nervous system postsynaptic inhibitory transmitter.	
GBCM	Biochemical, General	Biochemistry - the chemistry of living organisms and the vital processes; physiological chemistry.	
GCBN	Gap charge balance	A measurement used for determining blood gases. Because of electrochemical balance the concentrations of serum cations and anions are the same. However, in the routine measurement of electrolytes, more anions are unmeasured than are cations; this leads to an expected "anion gap." As typically calculated, the anion gap is based on only three electrolytes: sodium, chloride and bicarbonate (or serum CO ₂).	http://www.mtsinai.org/pulmonary/noninvasive/gaps.htm
GD1A	Ganglioside GD1a	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	http://cancerweb.ncl.ac.uk/omd/
GD1B	Ganglioside GD1b	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	http://cancerweb.ncl.ac.uk/omd/
GESM	Geosmin	Geosmin, trans-1,10-dimethyl-trans-9-decalol, is a metabolite produced by several cyanobacteria species at varying amounts.	
GERA	Geranyl Acetate	No definition available.	
GERN	Geraniol	Used in perfumery and flavoring.	
GGGH	Glutathione disulfide to glutathione ratio	The ratio of glutathione disulfide to glutathione.	

BCM BIOCHEMICAL EFFECT			
GGLB	gamma-Globulins	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water. It can also be precipitated out of solution and into a solid with a solution of ammonium sulphate at 50% saturation.	http://cancerweb.ncl.ac.uk/omd/
GGM1	Ganglioside GM1	Form of gangliosidosis characterized by accumulation of g(m1) ganglioside and oligosaccharides, and caused by an absence or severe deficiency of beta-galactosidase a. The three phenotypes of g(m1) gangliosidosis are called infantile (generalized), juvenile, and adult (types 1, 2, and 3 respectively), referring to the age at which clinical manifestations appear.	http://cancerweb.ncl.ac.uk/omd/
GGT1	Ganglioside GT1	Any disease characterized, in part, by the abnormal accumulation within the nervous system of specific gangliosides, e.g., GM2 gangliosidosis, Tay-Sachs disease, caused by hexosaminidase A enzyme deficiency with accumulation of GM2 ganglioside.	http://cancerweb.ncl.ac.uk/omd/
GINS	Ginsenosides	No definition available.	
GLCN	Glycine	An amino acid.	
GLOB	Globulin	A simple globular protein which cannot be dissolved in pure water but which can be dissolved if a salt is added to the water.	http://cancerweb.ncl.ac.uk/omd/
GLTH	Glutathione	A widely distributed tripeptide that is important in plant and animal tissue oxidation reactions.	
GLTL	Galactolipid	A glycolipid that yields galactose on hydrolysis.	http://www.fasthealth.com/dictionary/g/galactolipid.php
GLTT	Glutamate	A salt or ester of glutamic acid.	
GLUC	Glucose	A sugar.	
GLYC	Glycogen	A polysaccharide stored in the liver and muscles.	
GLYP	Glycoprotein Composition	Glycoprotein - Any of a class of conjugated proteins containing both carbohydrate and protein units.	
GLYT	Total Glycolipid Content	Glycolipid - a lipid containing carbohydrate groups.	
GMIN	Glutamine	Monoamide of glutamic acid, important carrier of urinary ammonia and is broken down in the kidney by the enzyme glutaminase.	

BCM BIOCHEMICAL EFFECT			
GNGL	Ganglioside	A glycosphingolipid that contains one or more residues of N acetyl or other neuraminic acid derivatives. Gangliosides are found in highest concentration in cells of the nervous system, where they can constitute as much as 5% of the lipid.	http://cancerweb.ncl.ac.uk/omd/
GPRO	Glial fibrillary acidic protein	A protein found in microfilaments of glial cells, helps distinguish glial from non-glial tumors.	http://cancerweb.ncl.ac.uk/omd/
GSSG	Glutathione disulfide	A glutathione derivative that forms when the sulfhydryl side chains of the cysteine residues of two glutathione molecules form a disulfide bond during the course of being oxidized with various oxides and peroxides in cells.	http://cancerweb.ncl.ac.uk/omd/
GTAS	Glutamine and asparagine	Glutamine: An amino acid. Monoamide of glutamic acid, important carrier of urinary ammonia and is broken down in the kidney by the enzyme glutaminase. Asparagine: A white crystalline amino acid found in many plant seeds.	McGraw-Hill Scientific Dictionary
GTCO	gamma-Tocopherol concentration	One of eight compounds that occur in nature that have vitamin E activity, an essential vitamin that functions as an antioxidant.	
GTMA	Glutamic acid	An amino acids commonly found in proteins. Plays a central role in amino acid metabolism, acting as precursor of glutamine, proline and arginine.	
GYCL	Glycerol content	A sweet syrupy hygroscopic trihydroxy alcohol C ₃ H ₈ O ₃ usually obtained by the saponification of fats and used especially as a solvent and plasticizer .	
H108	Heat shock protein 108	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
H2O2	Hydrogen Peroxide	Unstable colorless liquid used as a bleach, chemical intermediate, rocket fuel, and antiseptic.	

BCM BIOCHEMICAL EFFECT			
HCO3	Bicarbonate (HCO3-) concentration	<p>A carbonate in which but half the hydrogen of the acid is replaced by a positive element or radical, thus making the proportion of the acid to the positive or basic portion twice what it is in the normal carbonates; an acid carbonate; sometimes called supercarbonate.</p> <p>They are an important factor in determining the pH of the blood and the concentration of bicarbonate ions is regulated by the kidney. Levels in the blood are an index of the alkali reserve or buffering capacity.</p>	http://cancerweb.ncl.ac.uk/omd/
HDCB	Hydrocarbons	An organic molecule which consists only of carbon and hydrogen atoms, and no other elements.	http://cancerweb.ncl.ac.uk/omd/
HDCH	High density lipoprotein cholesterol:Total cholesterol	The ratio between high density lipoprotein cholesterol and total cholesterol concentrations in a sample.	
HDLC	High density lipoprotein cholesterol	Lipoproteins, which are combinations of lipids (fats) and proteins, are the form in which lipids are transported in the blood.	
HEME	Heme Content	Heme - any quadridentate chelate of iron with the four pyrrole groups of a porphyrin; found in blood.	
<HEMT>	Hematological Parameters	No definition available.	
HGCO	Mercury concentration	The concentration of mercury found in a sample.	
HIHT	5-HIAA5-HT Ratio	The ratio of 5-Hydroxyindole Acetic Acid to 5-Hydroxytryptamine ratio.	
HIST	Histidine	An amino acid.	
HITY	Histidine to tyrosine ratio	Ratio of histidine to tyrosine in an organism or organism's tissues.	
HMCT	Hematocrit (Anemia)	Measurement of the volume of packed red cells in a blood specimen after centrifugation of hematocrit tube.	
HMCY	Hemocyanin	A blue respiratory pigment found only in mollusks and in arthropods other than insects.	
HMGL	Hemoglobin	Oxygen carrying pigment of the erythrocytes.	
HMGT	Hemagglutinin	An erythrocyte-agglutinating antibody.	

BCM BIOCHEMICAL EFFECT			
HMPG	4-Hydroxy-3-methoxyphenylglycol	A metabolite of norepinephrine (abbreviated by MHPG).	
HNMS	N[3H-methyl]scopolamine	No definition available.	
HP20	Heat shock protein 20	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP30	Heat shock protein 30	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP32	Heat shock protein 32	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP40	Heat shock protein 40	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP42	Heat shock protein 42	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP52	Heat shock protein 52	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP60	Heat Shock Protein 60 (HSP60)	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP70	Heat Shock Protein 70 (HSP70)	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP72	Heat shock protein 72	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	

BCM BIOCHEMICAL EFFECT			
HP73	Heat shock protein 73	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP75	Heat shock protein 75	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HS78	Heat shock protein 78	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP90	Heat shock protein 90	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HP96	Heat shock protein 96	Any of a group of a proteins that are synthesized in the cytoplasm of cells as part of the heat shock response and act to protect the chromosomes from damage.	
HPLN	Hydroxyproline	Specific proline residues on the amino side of a glycine residue in collagen become hydroxylated at C4, before the polypeptides become helical, by the activity of prolyl hydroxylase. This enzyme has a ferrous ion at the active site and a reducing agent such as ascorbate is necessary to maintain the iron in the ferrous state. The presence of hydroxyproline is essential to produce stable triple helical tropocollagen, hence the problems caused by ascorbate deficiency in scurvy. This unusual amino acid is also present in considerable amounts in the major glycoprotein of primary plant cell walls.	(see HRGP). http://cancerweb.ncl.ac.uk/omd/
HPXN	Hemopexin	Single chain haem binding plasma _1 glycoprotein (57 kD) unlike haptoglobin does not bind haemoglobin	http://cancerweb.ncl.ac.uk/omd/
HSTM	Histamine	Formed by decarboxylation of histidine. Potent pharmacological agent acting through receptors in smooth muscle and in secretory systems. Stored in mast cells and released by antigen. (See hypersensitivity). Responsible for the early symptoms of anaphylaxis. Also present in some venoms.	http://cancerweb.ncl.ac.uk/omd/
HVLA	Homovanillic acid	A metabolite of dopamine. Also known as 3-Methoxy-4-hydroxyphenylacetic acid.	

BCM BIOCHEMICAL EFFECT			
HXDC	Hexadecenoate	A fatty acid.	
IBIL	Indirect Bilirubin (Free)	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
ICON	Iodine concentration	The concentration of Iodine found in a sample.	
IDMN	Isodesmosine + Desmonine	Isodesmosine: 2-(4-amino-4-carboxybutyl)-1-(5-amino-5-carboxypentyl)-3,5-bis(3-amino-3-carboxypropyl)pyridinium. A rare amino acid found in elastin, formed by condensation of four molecules of lysine into a pyridinium ring. PLUS Desmosine: Component of elastin, formed from four side chains of lysine and constituting a cross linkage.	http://cancerweb.ncl.ac.uk/omd/
ILEU	Isoleucine	An amino acid.	
IMNT	Iso-menthone	No definition available.	
ISDM	Isodesmosine	2-(4-amino-4-carboxybutyl)-1-(5-amino-5-carboxypentyl)-3,5-bis(3-amino-3-carboxypropyl)pyridinium. A rare amino acid found in elastin, formed by condensation of four molecules of lysine into a pyridinium ring.	http://cancerweb.ncl.ac.uk/omd/
FECO	Iron Content	Metal that is an essential constituent of hemoglobin, cytochrome and other components of respiratory enzyme systems; chief function is the transport of oxygen to tissues and in cellular oxidation mechanisms.	
KCDR	Potassium Cadmium Ratio	The ratio of potassium to cadmium in a sample.	
KCUR	Potassium Copper Ratio	The ratio of potassium to copper in a sample.	
KNAR	Potassium Sodium Ratio	The ratio of potassium to sodium in a sample.	
LA2S	L-Ascorbyl-2-sulfate	No definition available.	
LACT	Lactate	The anionic form of lactic acid, a salt of lactic acid.	
LALN	Ratio of linoleic to linolenic fatty acids	Ratio of linoleic to linolenic fatty acids	

BCM BIOCHEMICAL EFFECT			
LAMT	Total lauric acid metabolites	A total of all metabolism products of lauric acid.	ECOREF#67744
LASC	L-ascorbic acid	Synonym-ascorbic acid (ASCA). Vitamin C. A water-soluble vitamin found in many fruits and vegetables.	Dorlands Medical Dictionary
LASS	L-ascorbyl-2-sulfate	A stable derivative of ascorbic acid used as a source of vitamin C.	http://www.asasea.com/technical/AQ48-okeefe.pdf
LCCT	Leucocrit	(Leukocrit) the volume percentage of leukocytes in whole blood.	
LCTA	Lactic Acid	Metabolic intermediate involved in biochemical processes, end product of glycolysis.	
LCTS	Lactose	The major sugar in human and bovine milk.	http://cancerweb.ncl.ac.uk/omd/
LDLP	Low density lipoprotein	Lipoprotein substances (combination of a fat and a protein) which acts as a carrier for cholesterol and fats in the bloodstream.	http://cancerweb.ncl.ac.uk/omd/
LDNT	Lipids, Neutral	No definition available.	
LDPL	Lipids, Polar	No definition available.	
LDPO	Lipid Peroxides	Peroxides produced in the presence of a free radical by the oxidation of unsaturated fatty acids in the cell in the presence of molecular oxygen. The formation of lipid peroxides results in the destruction of the original lipid leading to the loss of integrity of the membranes. They therefore cause a variety of toxic effects in vivo and their formation is considered a pathological process in biological systems. Their formation can be inhibited by antioxidants, such as vitamin e, structural separation or low oxygen tension.	
LNLN	Linolenic acid	An 18 carbon fatty acid with three double bonds (9, 12, 15, octadecatrienoic acid) and isomers. Essential dietary component for mammals.	http://cancerweb.ncl.ac.uk/omd/
LPPX	Lipoperoxide	A chemical that impairs prostacyclin synthesis and promote thromboxane synthesis, which can increase platelet aggregation.	
PBAI	Lead Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	

BCM BIOCHEMICAL EFFECT			
PBCO	Lead Content	Metal.	
LEUC	Leucine	An amino acid.	
LGHE	Leghemoglobin	Leghemoglobin is a red-colored enzyme active in the environment of N ₂ -fixing nodules; leghemoglobin mediates the high O ₂ requirements of the N ₂ -fixing bacteroids and the necessity of the O ₂ -limited environment.	
LICO	Lithium content	The concentration of lithium found in a sample.	
LIMO	Limonene	A terpene with a lemon odor that is found in oils from citrus fruits and in oils from peppermint and spearmint.	
LINA	Linalool	A terpene that has a bergamot odor and is found in many essential oils, particularly in bergamot and rosewood; used as a flavoring agent and in perfumes.	
LINO	Linoleic Acid	A principal fatty acid in plants and considered essential in animal nutrition; used in medicine, feeds, paints, and margarine.	
LIPD	Lipid	Fat or fat-like substances, total lipid.	
<LIPT> goes to LIPD	Lipid Content, Total	No definition available.	
LNEI	Linolenic and Eicosenoic Acid	Linolenic acid - One of the principle unsaturated fatty acids in plants and essential fatty acids in plants and an essential fatty acid in animal nutrition. Eicosenoic acid - a saturated fatty acid; a constituent of butter.	
LNLT	Linoleate	A fatty acid. A salt of linoleic acid.	
LPFS	Lipofuscin	Any of a group of liquid pigments found in cardiac and smooth muscle cell, in macrophages, and in parenchyma and interstitial cells; differential reactions include sudanophilia, Nile blue staining, fatty acid, glycol, and ethylene.	
LPSA	Lipid Soluble Antioxidants	Antioxidant - substance that prevents or delays deterioration by action of oxygen.	
LYSI	Lysine	An amino acid.	
LUTE	Lutein	An orange xanthophyll C ₄₀ H ₅₆ O ₂ occurring in plants, animal fat, egg yolk, and the corpus luteum.	

BCM BIOCHEMICAL EFFECT			
MCHC	Mean Corpuscular Hemoglobin Concentration	The mean concentration of hemoglobin in the red blood cell (hemoglobin/hematocrit).	
MCHG	Mean Corpuscular Hemoglobin	The mean mass of hemoglobin in the red blood cell (hemoglobin * 10/red blood cell count).	
MCON	Mineral content	Mineral content.	
MCPR	Microsomal Proteins	Proteins found in microsomes.	
MCPV	Mean Corpuscular Volume	Measure average size of a single red blood cell. Used to classify anemias. Derived value obtained by dividing hematocrit / Total RBC	
MCYS	Microcystin	.M. aeruginosa produces compounds called microcystins, which are potent hepatotoxins and probable tumor promoters.	
MDCH	Methyl-4,7,10,13,16,19-Docosahexanate	No definition available.	
METH	Methionine	An amino acid.	
7MRF	7-Methoxyresorufin	No definition available.	
MGAL	Magnesium to aluminum ratio	The ratio of the amount of magnesium to aluminum in an organism or organism's parts.	
MGCO	Magnesium	Metal, that is essential in nutrition, required for the activity of many enzymes, especially those concerned with oxidative phosphorylation	
MGDG	Monogalactosyl Diglyceride (Glycolipid) Content	Glycolipid - lipid containing carbohydrate groups, usually galactose. The simplest are the glycodiacyl-glycerols.	
MGLB	Methemoglobin	Hemoglobin in the oxidized state. Also methemoglobin.	
MLAT	Malate	A salt of malic acid.	

BCM BIOCHEMICAL EFFECT			
MLDH	Malondialdehyde	Malonaldehyde is found in many foodstuffs and can be present at high levels in rancid foods. It is present as a lipid metabolite in human and animal tissues. It is probably used only as a research chemical.	
MNAI	Manganese Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
MNAC	Menthyl Acetate	No definition available.	
MNCO	Manganese Content	Metal, occur in body tissue in very small amounts and acts as an activator of liver arginase and other enzymes.	
MNFE	Manganese to iron ratio	Ratio of manganese to iron in an organism or organism's tissues.	
MNTH	Menthone	Oily, colorless ketonic liquid with slight peppermint odor.	
MOCO	Molybdenum Content	A silvery metal used in iron-base alloys.	
MRNN	Marennine	A blue pigment secreted by algae.	
MRXC	Mirex concentration	The amount of the chemical Mirex found in an organism, tissue or response site	
MTHL	Menthol	A compound used in medicines and perfumes, and as flavoring agent. Also known as peppermint camphor.	
MTLN	Metallothionein	A group of vertebrate and invertebrate proteins that bind heavy metals that may be involved in zinc homeostasis and resistance to heavy-metal toxicity.	
MYLN	Myelin	The material making up the myelin sheath of nerve axons.	http://cancerweb.ncl.ac.uk/omd/
NADG	beta-N-Acetyl-D-glucosaminidase	A lysosomal enzyme known to be released from macrophages during inflammation.	
<NADP>	Nicotinamide-adenine Dinucleotide Phosphate, Reduced	(nicotinamide) NADP - a coenzyme compound of ribosylnicotinamide 5'-phosphate, serves as an electron carrier in a number of reactions.	
NAKR	Sodium:Potassium Ratio	The ratio of sodium to potassium in a sample.	

BCM BIOCHEMICAL EFFECT			
NAZN	Sodium Zinc Ratio	The ratio of sodium to zinc in a sample.	
NO3-	Nitrate	A salt or ester of nitric acid.	http://www.m-w.com/
NCON	Nitrogen	Gaseous element that is a constituent of protein and nucleic acids and is present in all living cells.	
NEAA	Amino Acids, Nonessential	The amino acids required for protein synthesis that are synthesized by the organism and are not specifically required in the diet.	
NICO	Nickel Content	The concentration of nickel found in a sample.	
NIFE	Nickel to nitrogen ratio	Ratio of nickel to nitrogen in an organism or organism's tissues.	
NKPH	Enkephalin	Either of two peptides with opiate and analgesic activity that occur naturally in the brain and have a marked affinity for opiate receptors.	http://www.m-w.com/
NOCO	Nitric Oxide concentration	This compound is produced from L arginine by the enzyme nitric oxide synthase. Acts as a potent vasorelaxant via elevation of intracellular cGMP in vascular smooth muscle.	http://cancerweb.ncl.ac.uk/omd/
NPSH	Nonprotein Sulfhydryl	Sulfhydryl - the univalent radical of sulfur.	
NPSS	Ninhydrid-positive Substances	No definition available.	
NRGC	Energy Compound	No definition available.	
NRMA	Neuraminic acid	Sometimes known as sialic acid, but strictly one of a family of sialic acids (which includes also N glycolyl neuraminic acid and O substituted derivatives). It is a 9 carbon sugar formed by adding to mannose three carbons from pyruvate. Occurs in the subset of glycolipids known as gangliosides and in glycoproteins. The presence of its carboxyl group on glycolipids and glycoproteins is responsible for much of the negative charge on animal cell surfaces.	http://cancerweb.ncl.ac.uk/omd/
NSRA	Nitrogen to sulfur ratio	No definition available.	
NSUG	Non-reducing sugars	Sugar and therefore does not react with amino acids or proteins.	

BCM BIOCHEMICAL EFFECT			
NUAC	Nucleic Acids	A large, acidic, chainlike molecule containing phosphoric acid, sugar, and purine and pyrimidine bases; two types are ribonucleic acid and deoxyribonucleic acid.	
NUTR	Nutrient Status Change	No definition available.	
NXNT	Neoxanthine	Carotenoid pigments involved in photosynthesis. Consist of oxygenated carotenes, eg. lutein, violaxanthin and neoxanthine.	
O1LA	(omega -1)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O2LA	(omega-2)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O3LA	(omega-3)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
O6LA	(omega-6)-Hydroxy lauric acid	Hydroxylation product of the metabolism of lauric acid.	ECOREF 67744
OACD	Organic acids	Initial product of photosynthesis.	
OGLT	Oxidized glutathione	Predominant non-protein thiol in animal tissues and in many physiological fluids	
OHGL	O2 Specific Bond to Hemoglobin	No definition available.	
OLCO	Oil Content	No definition available.	
OLEC	Oleic Acid	Yellowish, unsaturated fatty acid with lard-like aroma; the main component of olive and cooking oils; used in soaps, ointments, cosmetics, and ore beneficiation.	
OLYD	Oil Yield	No definition available.	
ONRA	Oxygen to nitrogen ratio	The ratio of oxygen to nitrogen in a sample.	
ORNI	Ornithine	An amino acid.	
OCON	Oxygen Content	The concentration of oxygen found in a sample.	

BCM BIOCHEMICAL EFFECT			
ORGR	oxidized to reduced glutathione ratio	No definition available.	
OSDB	Oestradiol breakdown products	Amount of polar metabolites formed in nmoles/ g microsomal fraction from the breakdown of estradiol.	
OXHC	Oxyhemocyanin	Hemocyanine charged with oxygen.	
PARG	Phosphoarginine	A high-energy phosphate compound that is primarily found in invertebrates.	
PALL	Palmitoleic Acid	An unsaturated fatty acid, found in marine animal oils.	
PALM	Palmitic Acid	A fatty acid derived from spermaceti; used to make metal palmitates and in soaps, water-proofing , and lubricating oils.	
7PRF	7-Pentoxoresorufin	No definition available.	
PBHB	Poly-b-hydroxybutyrate	No definition available.	
PBIC	Lead 131-Iodine content	The content of Lead 131-iodine found in an organism or tissue.	
PCBC	PCB concentration	The amount of the chemical(s) Polychlorinated biphenol(s) found in an organism, tissue or response site.	
PCLV	Packed Cell Volume	The venous hematocrit determined by centrifugation; the number of packed red cells in ml/100ml of centrifuged blood.	
PCRE	Phosphocreatinine	A high energy reservoir for ATP formation.	http://web.stcloudstate.edu/lsreema/Assets/Biochem480/MetabGen.pdf
PDST	Phosphodiester	A diesterified orthophosphoric acid, RO-(PO ₂ H)-OR', as in the nucleic acids.	http://cancerweb.ncl.ac.uk/omd/
PEGE	Polyethylene Glycol (Peg) Efflux	No definition available.	
PFER	Phosphorus to Iron Ratio	No definition available.	

BCM BIOCHEMICAL EFFECT			
PGE2	Prostaglandin E2	Any of a group of components derived from unsaturated 20 carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway that are extremely potent mediators of a diverse group of physiologic processes. The abbreviation for prostaglandin is PG, specific compounds are designated by adding one of the letters A through I to indicate the type of substituents found on the hydrocarbon skeleton and a subscript (1, 2 or 3) to indicate the number of double bonds in the hydrocarbon skeleton for example, PGE2. All of the prostaglandins act by binding to specific cell surface receptors causing an increase in the level of the intracellular second messenger cyclic AMP (and in some cases cyclic GMP also). The effect produced by the cyclic AMP increase depends on the specific cell type. Increased cyclic AMP increases prostaglandin synthesis leading to further increases in cyclic AMP. See also individual prostaglandins.	http://cancerweb.ncl.ac.uk/omd/
PHEN	Phenylalanine	An amino acid.	
PCON	Phosphorus Content	Essential element in the diet, found in bones, abundant in all tissues, is involved in some form in almost all metabolic processes.	
PHPH	pH	Hydrogen ion concentration.	
PHSC	Phosphatidyl Choline (Phospholipid) Content	Choline attached to a phospholipid; major component of cell membranes.	
PHSE	Phosphatidyl Ethanolamine (Phospholipid) Content	A phospholipid with an ethanolamine attached; major constituent of cell membranes.	
PHSG	Phosphatidyl Glycerol (Phospholipid) Content	No definition available.	
PHSI	Phosphatidyl Inositol (Phospholipid)	A phospholipid with the sugar inositol attached; minor constituent of cell membranes.	
PHSP	Phosphatide Phosphorus	Phospholipid with phosphorus.	

BCM BIOCHEMICAL EFFECT			
PHST	Phospholipid Content, Total	Phospholipid - major form of lipid in cell membranes.	
3PPG	3-phosphoglycerate	One of the molecules involved in the Calvin cycle which is the fixation of carbon dioxide during photosynthesis.	
PHTC	Phytochelatin	Phytochelatin are small polypeptide compounds produced in plants by enzymes which are expressed in response to heavy-metals (Cd ²⁺ , Pb ⁴⁺) .	
PHYC	Phycocyanin	A blue phycobilin. Phycobilin - any of various protein-bound pigments which are open chain tetrapyrroles and occur in some groups of algae.	
PINE	Alpha-pinene	Isomeric unsaturated bicyclic terpene hydrocarbon liquids derived from sulfate wood turpentine; used as solvents for coatings and wax formulations, as chemical intermediates for resins, and as lube-oil additives.	
PLAC	Pulp:Acid	Pulp to acid ratio.	
PLAT	Platelets	Z minute flattened body, especially blood platelets.	
PLSC	Polysaccharide	Polymers of (arbitrarily) more than about ten monosaccharide residues linked glycosidically in branched or unbranched chains.	http://cancerweb.ncl.ac.uk/omd/
PMST	Phosphomonoester	No definition available.	
PNAS	p-Nitroanisol	The amount of p-Nitroanisol contained within a response site.	
POLD	Peroxidizable lipids	Lipids that are able to be peroxidized.	
PORP	Porphyrin	Found in prosthetic groups of hemoglobin, myoglobin, and cytochromes.	
KCON	Potassium Content	Metallic element of the alkali group, chief cation of muscle and most other cells (intracellular fluid).	
PPHT	Phosphate	Phosphate esters occur in many body constituents including nucleotides and nucleic acids, phospholipids, and phosphoproteins.	
PPYT	Phaeophytin	A breakdown product of chlorophyll	(www.dep.state.fl.us/labs/biology/microbio.htm)

BCM BIOCHEMICAL EFFECT			
PRCO	Protein Content	Protein - principle component of protoplams of cells; a combination of amino acids in peptide linkages.	
PRLN	Proline	A heterocyclic amino acid occurring in essentially all proteins, and as a major constituent in collagen protein.	
PROB	Protein binding	No definition available.	
PRSH	Protein bound sulfhydryl	Protein bound sulfhydryl.	
PRSL	Soluble Protein	Protein - principle component of protoplams of cells; a combination of amino acids in peptide linkages.	
PRTL	Protein, Total	No definition available.	
PRTO	Protoporphyrin	Combines with heme to form the heme prosthetic group of hemoglobin and myoglobin.	
PRUP	Protein to urea ratio	Ratio of protein to urine.	
PSCY	Plastocyanin	A prototypical blue-copper 'cupredoxin' protein, whose function is electron transfer in photosynthesis.	
PSPH	Phosphagen	A nutrient formed from 3 specific amino acids that saturate muscle tissue with creatine which is a compound of muscle energy production.	
PSPI	Phosphatidylserine and phosphatidylinositol	Derivatives of phosphatidic acids that are parts of biomembranes.	
PSPY	Phosphoenol pyruvate	An important metabolic intermediate. The enol (less stable) form of pyruvic acid is trapped as its phosphate ester, giving the molecule a high phosphate transfer potential. Formed from 2 phosphoglycerate by the action of enolase.	
PUTR	Putrescine	An amine associated with putrifying tissue. Associates strongly with DNA. Has been suggested as a growth factor for mammalian cells in culture.	http://cancerweb.ncl.ac.uk/omd/
PYRT	Pyrethrin	A relatively safe botanical poison derived from a species of chrysanthemum, it breaks down quickly in the environment. It kills by interfering with the pattern of insect nerve transmissions.	
PYRV	Pyruvate	The end product of glycolysis (used synonymously with pyruvic acid).	

BCM BIOCHEMICAL EFFECT			
PZNR	Phosphorus to Zinc ratio	Ratio of phosphorus to zinc in an organism or organism's tissues.	
RBGD	Retinoyl beta-glucuronide	An unstable metabolite of the vitamin A metabolite retinoic acid.	http://www.pharmacy.ohio-state.edu/homepage/program/medchem/medc_curley.html
RBVL	Relative Blood Volume (Volume/100g Body Weight)	Sum of red cell volume and plasma volume in relation to body weight.	
<RGSH>	Reduced Glutathione	Reduced form (less hydrogen) of glutathione.	
RHDP	Rhodopsin	Light sensitive pigment formed from retinal linked through a Schiff's base to opsin: rhodopsin is an integral membrane protein found in the discs of retinal rods and cones, comprising some 40% of the membrane. Vertebrate opsins are proteins of 38 kD.	http://cancerweb.ncl.ac.uk/omd/
RIBO	Riboflavin Content	The heat stable factor of the vitamin B complex; serves as a component of two coenzymes - FAD and FMN	
RIDX	Refractive Index	The refractive power of a medium with that of air which is assumed to be 1.	
RRRA	13-cis-Retinoic acid to 9,13-di-cis-Retinoic acid ratio	The ratio of 13-cis-Retinoic acid to 9,13-di-cis-Retinoic acid	ECOTOX
RSUG	Reducing sugars	Reducing sugars refer to any saccharide bearing an anomeric carbon atom which has not formed a glycosidic bond. So called because of the facility with which the aldehyde group reduces mild oxidizing agents.	
RTES	Retinyl esters	Sum of retinyl palmitate, retinyl stearate, and retinyl oleate.	ECOTOX 80509
RTND	Retinoids	A class of keratolytic drugs derived from retinoic acid and used for treatment of severe acne and psoriasis.	http://cancerweb.ncl.ac.uk/omd/
RTRP	Retinol/Retinyl palmitate ratio	The ratio of Retinol to Retinyl palmitate in a sample.	ECOTOX

BCM BIOCHEMICAL EFFECT			
RTST	Retinyl stearate	A derivative of Vitamin A.	http://www.umm.edu/altmed/ConsSupplements/VitaminARetinolcs.html
SCCN	Succinate	A salt or ester of succinic acid; for example sodium succinate, the reaction product of succinic acid and sodium hydroxide.	
SCON	Sulfur Content	The concentration of sulfur found in a sample.	
SECO	Selenium content	The concentration of selenium found in a sample.	
SERI	Serine	An amino acid.	
SESR	Selenium to sulfur ratio	No definition available.	
SEWE	Steryl esters and wax esters	A component of the lipid content of organisms.	
SFTD	Sulfatides	Cerebroside sulfuric esters containing one or more sulfate groups in the sugar portion of the molecule.	http://cancerweb.ncl.ac.uk/omd/
SGMP	Sugar monophosphates	Initial product of photosynthesis.	
SGRV	Specific gravity	The ratio of the density of a substance to the density of some substance (as pure water) taken as a standard when both densities are obtained by weighing in air.	
SIAL	Sialic acid	A group of naturally occurring n- and o-acyl derivatives of the deoxyamino sugar neuraminic acid. They are ubiquitously distributed in many tissues.	http://cancerweb.ncl.ac.uk/omd/
SICO	Silicon content	The concentration of silicon found in a sample.	
SLAC	Silicic acid	Hydrated silicon dioxide that occurs in nature. It is insoluble in water or acids except hydrofluoric acid.	http://cancerweb.ncl.ac.uk/omd/
SLFH	Sulfhydryl	The univalent radical of sulfur, also known as thiol.	
SLFT	Sulfate concentration	The concentration of sulfate measured in a sample.	

BCM BIOCHEMICAL EFFECT			
SPHG	Sphingomyelin	A group of phospholipids, found in brain, spinal cord, kidney, and egg yolk, containing 1-phosphocholine (choline O-phosphate) combined with a ceramide (a long-chain fatty acid linked to the nitrogen of a long-chain base, such as sphingosine). Synonym: ceramide 1-phosphorylcholine, phosphosphingosides.	http://cancerweb.ncl.ac.uk/omd/
SPHS	Sugar phosphates	Initial product of photosynthesis.	
SPIG	Spiggin	A glue protein produced by the kidney of a male stickleback that is used as a cementing substance for the building of a nest.	ECOREF 62582
SPMD	Spermidine	A polyamine compound, C ₇ H ₁₉ N ₃ , found in ribosomes and living tissues and having various metabolic functions. It was originally isolated from semen.	The American Heritage® Dictionary of the English Language: Fourth Edition. 2000.
SQVD	Sulfoquinovosyl diglyceride	A lipid.	
SSER	Sulfur to Selenium Ratio	No definition available.	
<SMET>	Secondary Metabolism	No definition available.	
NACO	Sodium Content	Alkaline metallic element, chief cation of the extracellular body fluids.	
SRCO	Strontium Content	The concentration of strontium found in a sample.	
SSUG	Soluble Sugars	No definition available.	
STER	Stearic Acid	Nature's most common fatty acid, derived from natural animal and vegetable fats.	
STES	Sterol esters	Sterol esters are present in plant tissues, but as relatively minor components other than in waxes. Usually the sterol components of sterol esters are similar to the free sterols, although there may be relatively less of stigmasterol.	http://www.lipid.co.uk/infores/Lipids/sterols/
STLD	Saturated lipid or fat	A fatty acid with all potential hydrogen binding sites filled (totally hydrogenated fat).	http://cancerweb.ncl.ac.uk/omd/

BCM BIOCHEMICAL EFFECT			
STOL	Sterols	Any of a group of natural steroid alcohols derived from plants or animals; they are waxy insoluble substances. Any steroid-based alcohol having a hydrocarbon (aliphatic) side-chain of 8-10 carbons at the 17-beta position and a hydroxyl group at the 3-beta position (therefore an alcohol).	www.dictionary.com http://cancerweb.ncl.ac.uk/omd/
STRH	Starch Content	Polysaccharide.	
SUCR	Sucrose	A sugar such as sucrose, which is made up of two monosaccharides: one glucose molecule and one fructose molecule. Nonreducing disaccharide, D glucopyranosyl D fructofuranose	http://cancerweb.ncl.ac.uk/omd/
SUGA	Sugar Content	A sweet carbohydrate.	
SUFA	Ratio of saturated to unsaturated fatty acids	Ratio of saturated to unsaturated fatty acids	
TAUR	Taurine	Is one of the most abundant amino acids in the body. It is found in the central nervous system, skeletal muscle and is very concentrated in the brain and heart. It is synthesized from the amino acids methionine and cysteine, in conjunction with vitamin B6.	http://cancerweb.ncl.ac.uk/omd/
TBAR	Thiobarbituric Acid Reactive Substances	No definition available.	
TCTP	translationally controlled tumor protein	No definition available.	
TEAM	Tetraethyl Ammonium	The bromide and chloride salts are short acting quaternary ammonium ganglion-blocking agents.	
TERP	T-terpinene	No definition available.	
TFAA	Amino Acids, Total Free	No definition available.	
THBA	Thiobarbituric Acid	A condensation of malonic acids and ureas; parent compound for a class of barbiturates.	

BCM BIOCHEMICAL EFFECT			
THIA	Thiamin	A member of the water-soluble B vitamin group, necessary for energy production and carbohydrate metabolism. Deficiency is known as beriberi. Vitamin B1.	http://cancerweb.ncl.ac.uk/omd/
THRE	Threonine	An amino acid.	
TICO	Titanium content	The concentration of titanium found in a sample.	
TLCO	Thallium content	The concentration of thallium found in a sample.	
TLBL	Bilirubin, Total	Bilirubin - breakdown product of heme, normally circulates in plasma as a complex with albumin and is taken up by the liver cells and conjugated.	
TMAO	Trimethylamine oxide	Trimethylamine oxide (TMAO) is a common and compatible osmolyte in tissue that is often credited with counteracting protein-destabilizing forces.	www.cephbase.dal.ca/refdb/pdf/6856.pdf
TMFA	Tumour necrosis factor-alpha	Originally described as a tumour inhibiting factor in the blood of animals exposed to bacterial lipopolysaccharide or Bacille Calmette-Guerin. Preferentially kills tumour cells in vivo and in vitro, causes necrosis of certain transplanted tumours in mice and inhibits experimental metastases. Human Tumour Necrosis factor alpha (TNF-a) is a protein of 157 amino acids and has a wide range of pro inflammatory actions. Usually considered a cytokine. Also known as cachectin.	http://cancerweb.ncl.ac.uk/omd/
TNSC	Total Non-structural Carbohydrate	No definition available.	
TPPH	Thiamin pyrophosphate	The diphosphoric ester of thiamin, a coenzyme of several (de)carboxylases, transketolases, and alpha-oxoacid dehydrogenases. Synonym: aneurine pyrophosphate, cocarboxylase, diphosphothiamin.	http://cancerweb.ncl.ac.uk/omd/
TPSY	Trypsin	A proteolytic enzyme which catalyzes the hydrolysis of peptide linkages in proteins.	
TRIB	Tributyrin	A colorless fat, found in cows milk.	
TRIG	Triglycerides (Triacylglycerols)	A neutral fat synthesized from carbohydrates for storage in animal adipose cells; on enzyme hydrolysis it releases free fatty acids in the blood.	
TRTY	Tryptophan to tyrosine ratio	The ratio of tryptophan to tyrosine in an organism or organism's tissues.	
TRYP	Tryptophan	Amino acid.	

BCM BIOCHEMICAL EFFECT			
TRYS	Trypsinogen	The zymogen of trypsin, secreted in the pancreatic juice. Also known as protrypsin.	
TSFN	Transferrin	A protein that carries iron in the bloodstream (80 kD) found in mammalian serum, a beta globulin.	http://cancerweb.ncl.ac.uk/omd/
TTAA	Amino Acids, Total	Measure of total amino acids - any organic comp containing an amino and a carboxyl group.	
TTRN	Transthyretin	An a-globulin secreted by the liver; it forms a complex with retinol binding protein and binds retinol, transporting it to the peripheral tissues. It may also bind triiodothyronine or thyroxine although these are usually transported by thyroxine-binding globulins.	Dorland's Medical Dictionary
TYMD	Thymidine	A nucleoside derived from DNA; essential growth factor for certain microorganisms in mediums lacking vitamin B12 and folic acid.	
TYRO	Tyrosine	An amino acid.	
UCTR	Uroprophrin creatine ratio	The ratio of Uroprophrin to creatine in a sample.	ECOTOX
UDPA	Uridine Diphosphate (UDP) Acetylglucosamine	No definition available.	
UDGT	UDP-glucuronosyltransferase by using T4 as a substrate	No definition available.	
UPRP	Uroporphyrin	Porphyrins are pigments found in both animal and plant life. This test is useful in evaluating any number of porphyrin disorders (involving the various porphyrins) of red blood cells.	
UREA	Urea	Formed in the liver via the urea cycle from ammonia produced by the deamination of amino acids.	
UREN	Urea nitrogen	The nitrogen associated with the urea in the body.	
URIC	Uric Acid	The end product of purine catabolism in primates.	
VACC	Vaccenic acid	n-Trans-11-octadecenoic acid; an unsaturated fatty acid of which both cis- and trans- isomers are found in butter and other animal fats.	http://cancerweb.ncl.ac.uk/omd/
VALI	Valine	An amino acid.	

BCM BIOCHEMICAL EFFECT			
VCON	Vanadium content	The concentration of vanadium found in a sample.	
VEPO	Vitellogenin:protein ratio	The ratio of the amount of vitellogenin to the amount of protein in an organism.	
VIDD	Retinyl palmitate:Dehydroretinyl palmitate	Ratio of Retinyl palmitate to Dehydroretinyl palmitate found in a sample.	
VITA	Retinol (Vitamin A)	Vitamin A1 alcohol; 2,6,6-trimethyl-1-(9'-hydroxy-3',7'-dimethylnona-1',3',5',7'-tetraenyl)cyclohex-1-ene;a half-carotene bearing the b (or beta-ionone) form of the cyclic end group and a CH ₂ OH at the C-15 position (numbering as in carotenoids) or 9'-position (numbering as a nonyl side chain on a cyclohexene ring); an intermediate in the vision cycle, it also plays a role in growth and differentiation. Also known as Retinyl palmitate.	http://cancerweb.ncl.ac.uk/omd/
VITE	Vitellogenin	The serum phospholipoglycoprotein precursor to egg yolk.	
VIVT	Vitellogenin:Vitellin ratio	The amount of Vitellogenin to the amount of Vitellin in a sample.	
VLDL	Very low density lipoprotein	Composed mostly of cholesterol, with little protein and used to transport cholesterol, triglycerides and other lipids to various tissues. Often called "bad cholesterol" because it deposits cholesterol on the walls of arteries.	NIH-medline
VLXN	Violaxanthine	Carotenoid pigments involved in photosynthesis. Consist of oxygenated carotenes, e.g., lutein, violaxanthin and neoxanthine.	
VMAC	Vanillylmandelic acid	A metabolite of norepinephrine.	
VPRO	Vimentin	An intermediate filament protein found in mesodermally derived cells including muscle.	http://cancerweb.ncl.ac.uk/omd/
VTAE	Vitamin A ester (Retinyl ester)	A compound that has a fatty acid bound to the alcohol group of retinol.	http://www.canr.uconn.edu/nusci/hpg/fatsolublenotes.pdf
VTD3	Vitamin D3	Also called cholecalciferol; fat soluble vitamin.	

BCM BIOCHEMICAL EFFECT			
VTME	Vitamin E	Any of a series of eight related compounds called tocopherols, alpha-tocopherol having the highest biological activity; occurs in wheat germ and other naturally occurring oils.	
WTCO	Water Content	The amount of water found in a sample.	
<YLKE>	Yolk Energy	No definition available.	
ZNAI	Zinc Accumulation index	The ratio of a chemical in the organism to the ratio of the chemical in the soil.	
ZNCD	Zinc to cadmium ratio	Ratio of zinc to cadmium in an organism or organism's tissues.	
ZNCO	Zinc Content	Necessary in trace amounts in the body; it forms an essential part of enzymes and plays an important role in protein synthesis and cell division.	
ZNFE	Zinc to iron ratio	Ratio of zinc to iron in an organism or organism's tissues.	
ZNNA	Zinc to sodium ratio	Ratio of zinc to sodium in an organism or organism's tissues.	
ZNPP	Zinc protoporphyrin	A tightly bound, specific non-polypeptide unit required for the biological function of some proteins. A prosthetic group consisting of a protoporphyrin ring and a central iron (Zn) atom. High levels of zinc protoporphyrin (ZPP) in blood indicate lead exposure.	http://www.clunet.edu/BioDev/omm/catalase/frames/hemetx.htm
ZPP2	Zona pellucide protein 2	A glycoprotein that helps form a non-cellular membrane around a developing egg.	ECOREF 67746
ZPRO	Zona Radiata Protein	Also known as: vitelline envelope, zona radiata, or eggshell protein. A protein involved in the thickening of the cell membrane of the ovum.	http://cancerweb.ncl.ac.uk/omd/
ENZ ENZYME EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Note
2OHB	2-OH Biphenyl Hydroxylase	No definition available.	
3HAO	3-Hydroxyanthranilate oxygenase	An enzyme.	

ENZ ENZYME EFFECT			
450R	NADPH-cytochrome P-450 Reductase	No definition available.	
4CBH	4-chlorobiphenyl hydroxylase	An enzyme.	ECOTOX
4OHB	4-OH Biphenyl Hydroxylase	No definition available.	
5NLT	5-Nucleotidase activity	A liver enzyme that can be measured in the bloodstream. It can be a specific indicator for liver disease when it is elevated.	
AAPT	Alanine aminopeptidase	Catalysis of the release of an N-terminal amino acid, preferentially alanine, from an oligopeptide or polypeptide.	http://www.informatics.jax.org/searches/GO.cgi?id=GO:0016284
AATT	Alanine Aminotransferase	Abbreviated as ALT.	
ACAC	Acetyl-CoA carboxylase	A carboxylating enzyme that catalyses the conversion of ATP, acetyl-CoA, and hco3- to ADP, orthophosphate, and malonyl-CoA. It is a biotinyl-protein that also catalyses transcarboxylation. The plant enzyme also carboxylates propanoyl-CoA and butanoyl-CoA	http://cancerweb.ncl.ac.uk/omd/
ACHE	Acetylcholinesterase	An enzyme that breaks down unused acetylcholine in the synaptic cleft (the space between neurons), this enzyme is necessary to restore the synaptic cleft so it is ready to transmit the next nerve impulse.	http://cancerweb.ncl.ac.uk/omd/
ACOH	Acetanilide-4-hydroxylase	A marker for CYP1A2.	ECOREF#75745
ACPH	Acid Phosphatase	No definition available.	
AEPX	Aldrin Epoxidase	No definition available.	
AFCD	alpha-Fucosidase	An enzyme that catalyzes the hydrolysis of an alpha-l-fucoside, producing an alcohol and l-fucose; a deficiency of the lysosomal enzyme will result in fucosidosis.	http://cancerweb.ncl.ac.uk/omd/
AGCE	Angiotensin converting enzyme	An enzyme of the hydrolase class that catalyzes cleavage of the leucine leucine bond in angiotensin to generate angiotensin. The enzyme is synthesized as inactive prorenin in the kidney and released into the blood in the active form in response to va	

ENZ ENZYME EFFECT			
AGCT	alpha-Galactosidase	An enzyme that catalyzes the hydrolysis of terminal, non-reducing alpha-d-galactose residues in alpha-galactosides including galactose oligosaccharides, galactomannans, and galactolipids.	http://cancerweb.ncl.ac.uk/omd/
AGKN	Arginine kinase	Acts to maintain steady-state ATP concentrations by mobilizing stores of high energy phosphate during periods of rapid ATP hydrolysis.	
AGPD	alpha-glycerol phosphate dehydrogenase	NAD-dependent glycerol-3-phosphate dehydrogenase (1.1.1.8) (GPD) catalyzes the reversible reduction of dihydroxyacetone phosphate to glycerol-3-phosphate. It is a cytoplasmic protein, active as a homodimer, each monomer containing an N-terminal NAD binding site. In insects, it acts in conjunction with a mitochondrial alpha-glycerophosphate oxidase in the alpha-glycerophosphate cycle, which is essential for the production of energy used in insect flight.	http://www.ebi.ac.uk/interproDisplayIproEntry?ac=IPR006109
AGSE	alpha-Glucosidase	Enzymes that catalyze the exohydrolysis of 1,4-alpha-glucosidic linkages with release of alpha-glucose. Also known as alpha-D-Glucoside glucohydrolases	http://cancerweb.ncl.ac.uk/omd/
AGTF	Alanine gamma-glutamyltransferase	An enzyme.	
AHDX	Aniline Hydroxylase	No definition available.	
<AHHD>	Aryl Hydrocarbon Hydrolase	No definition available.	
AKPT	Alkaline protease	These proteases work best in the pH range of 8 to 11 and are used widely in washing powders and to de-hair hides.	
AKPY	Alkaline pyrophosphatase	A group of enzymes within the class EC 3.6.1.- that catalyze the hydrolysis of diphosphate bonds, chiefly in nucleoside di- and triphosphates. They may liberate either a mono- or diphosphate.	
ALAD	(Delta) Δ - Aminolevulinic Acid Dehydratase	Also known as (Delta) Δ -Aminolevulinic Acid Dehydrase.	
ALAS	(Gamma) Γ -ala Synthetase	No definition available.	

ENZ ENZYME EFFECT			
ALDH	Aldehyde dehydrogenase (ALDH)	An enzyme that catalyzes the conversion of an aldehyde to its corresponding acid.	
ALDO	Aldolase	An enzyme in anaerobic glycolysis that catalyzes the cleavage of fructose 1,6-diphosphate to glyceraldehyde 3-phosphate.	
ALIE	Ali esterase	Ali esterase also known as carboxylesterase which catalyzes a carboxylic ester to yield an alcohol and carboxylic acid anion; has wide specificity; also hydrolyzes vitamin a esters; can be used to separate stereoisomers; consider also esterase b which is a serine protease.	
ALLN	Allantoinase Activity	An enzyme (an amidohydrolase) that catalyses the hydrolysis of allantoin to allantoic acid.	http://cancerweb.ncl.ac.uk/omd/
ALPH	Alkaline Phosphatase	An enzyme that catalyses the cleavage of inorganic phosphate non-specifically from a wide variety of phosphate esters and having a high (greater than 8) pH optimum. Found in bacteria, fungi and animals but not in higher plants.	http://cancerweb.ncl.ac.uk/omd/
ALTM	Alanine transaminase	An enzyme that catalyses the conversion of l-alanine and 2-oxoglutarate to pyruvate and l-glutamate.	http://cancerweb.ncl.ac.uk/omd/
AMYL	Alpha-amylase	An enzyme that catalyses the endohydrolysis of 1,4-alpha-glycosidic linkages in starch, glycogen, and related polysaccharides and oligosaccharides containing 3 or more 1,4-alpha-linked d-glucose units.	http://cancerweb.ncl.ac.uk/omd/
AMNS	alpha-Mannosidase	Catalyzes hydrolysis of terminal, non-reducing alpha-d-mannose residues in alpha-d-mannosides. Also known as alpha-d-mannoside mannohydrolase, alpha-d-mannosidase, neutral alpha-mannosidase, alpha mannosidase a, alpha mannosidase b, lysosomal alpha-mannosidase, laman.	http://cancerweb.ncl.ac.uk/omd/
AMTR	Arsenite methyltransferase	An enzyme of the biotransformation pathway that forms methylarsonate from inorganic arsenite.	
ANAE	A-naphthyl Acetate Esterase	No definition available.	
APND	Aminopyrine N-demethylase	No definition available.	

ENZ ENZYME EFFECT			
APRT	Acid Protease	Any of many protein-hydrolyzing enzymes that work best in an acidic solution (usually in a pH range of 2-6). Such proteases include the stomach enzymes pepsin and rennin	
APYR	Acid pyrophosphatase	A group of enzymes within the class EC 3.6.1.- that catalyze the hydrolysis of diphosphate bonds, chiefly in nucleoside di- and triphosphates. They may liberate either a mono- or diphosphate.	
AREG	Arachidonate epoxygenase	Synonym- Arachidonic Acid Epoxygenase. Requires cytochrome p-450; uses NADPH and oxygen; forms 5,6-,8,9-11,12- and 14,15-cis-epoxyeicosatrienoic acids; p4502caa is the form isolated from rabbit renal cortex	http://cancerweb.ncl.ac.uk/omd/
ARHY	Aromatic hydroxylase	Enzyme is concentrated in the hepatic endoplasmic reticulum.	Free Online Medical Dictionary
ARMT	Aromatase	An enzyme which converts androgens to estrogens by desaturating ring a of the steroid. This enzyme complex is located in the endoplasmic reticulum of estrogen-producing cells including ovaries, placenta, testicular sertoli and leydig cells, adipose, and b. Also known as Estrogen synthetase or P450Arom	
ASAT	Aspartate Aminotransferase	Usually abbreviated as AST.	
ASCP	Ascorbate peroxidase	An enzyme.	
ASMT	Arsenite methyl transferase	an enzyme	
ASOA	Ascorbic Acid Oxidase Activity	A copper containing enzyme found in higher plants where it catalyzes the reversible oxidation of ascorbate to 2-dehydro-ascorbate acid with the concomitant reduction of molecular oxygen to water.	http://www.cordis.lu/tmr/src/grants/fair/975021.htm
ASPT	Arylsulphatase	Aryl sulphatases A, B and C comprise a group of enzymes originally assayed by their ability to hydrolyze O sulphate esters of aromatic substrates. Aryl sulphatase A, substrate cerebroside 3 sulphate, is deficient in metachromatic leukodystrophy. Aryl sulphatase B, substrate acetylhexosamine 4 sulphate in glycosaminoglycans, is deficient in Maroteaux-Lamy syndrome. Aryl sulphatase C hydrolyses oestrogen sulphates. All three are deficient in multiple sulphatase deficiency.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
ATPA	Adenosine Triphosphatase	A group of enzymes which catalyze the hydrolysis of ATP coupled with another function such as transporting calcium across a membrane. These enzymes may be dependent on calcium, magnesium, anions, h+, or DNA.	http://cancerweb.ncl.ac.uk/omd/
ATRP	Alanine Transpeptidase	No definition available.	
B5P4	b5/P-450	No definition available.	
BAMY	Beta-amylase	An enzyme that catalyses the hydrolysis of 1,4-alpha-glycosidic linkages in starch, glycogen, and related polysaccharides and oligosaccharides so as to remove successive beta-maltose units from the non-reducing ends of the chains.	http://cancerweb.ncl.ac.uk/omd/
BAPH	Benzo(a)pyrene Hydroxylase	No definition available.	
BAPM	Benzo(a)pyrene monooxygenase	An enzyme that catalyses the incorporation of one oxygen atom of molecular oxygen into benzo(a)pyrene.	
BCHE	Buterylcholinesterase	No definition available.	
BCOD	Butoxycoumarin O-dealkylase	No definition available.	
BGAL	(Beta) B-galactosidase	One of a class of enzymes which cuts the glycosidic bond between the sugar galactose and another sugar molecule (of a different type than galactose). There are two subclasses - the alpha galactosidases and beta galactosidases - which cuts the two types of glycosidic bonds (alpha and beta, respectively).	http://cancerweb.ncl.ac.uk/omd/
BGCR	beta-Glucuronidase	beta-Glucuronidase hydrolyzes conjugated glucuronides. It is ubiquitous in animal lysozymes. The enzyme has found wide application in determining urinary steroids.	http://www.worthington-biochem.com/manual/G/GL.html
BGMD	beta-Glucosaminidase	Cleaves all non-reducing terminal beta-linked N-acetylglucosamine.	http://www.prozyme.com/glycopro/index.html#GE30

ENZ ENZYME EFFECT			
BGSE	beta-Glucosidase	An enzyme that catalyzes the hydrolysis of terminal non-reducing residues in beta-d-glucosides with release of beta-glucose. Also known as beta-D-Glucoside glucohydrolase.	http://cancerweb.ncl.ac.uk/omd/
<BHXA>	Benzpyrene Hydroxylase	No definition available.	
BPND	Benzphetamine-n-demethylase	No definition available.	
BROD	Benzylresorufin O-deethylase	No definition available.	
C1A2	Cytochrome P-450 1A2	A polycyclic aromatic hydrocarbon-inducible cytochrome which is of significant clinical interest due to the large number of drug interactions associated with induction and inhibition of theophylline. Caffeine is considered to be a model substrate for this enzyme. It also metabolises theophylline and antipyrine. Environmental factors including cigarette smoking, charbroiled meat, cruciferous vegetables, and a number of drugs including phenytoin, phenobarbital, and omeprazole produce increases in cyp1a2 activity.	http://cancerweb.ncl.ac.uk/omd/
C2D6	Cytochrome p-450 cyp2d6	A polymorphic enzyme that catalyses the hydroxylation of debrisoquine. It also metabolises several antidepressants and neuroleptics. This enzyme is deficient in up to 10 percent of the population.	http://cancerweb.ncl.ac.uk/omd/
C2K1	Cytochrome P450 2K1	A microsomal cytochrome p450 isoform protein. (CYP2K1)	
C2M1	Cytochrome P450 2M1	A microsomal cytochrome p450 isoform protein. (CYP2M1)	
CA27	Cytochrome P450 3A27	A microsomal cytochrome p450 isoform protein. (CYP3A27)	
CAAH	Carbonic Anhydrase	No definition available.	
CACA	Choline Acetyltransferase	An enzyme that controls the production of acetylcholine, appears to be depleted in the brains of Alzheimer patients.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
CAPK	Choline phosphokinase	Also known as choline kinase and choline phosphotransferase. An enzyme that is active in the first step of choline phosphoglyceride (lecithin) biosynthesis by catalyzing the phosphorylation of choline to phosphorylcholine in the presence of ATP.	http://cancerweb.ncl.ac.uk/omd/
CATP	Calcium ATPase	Usually used of the calcium pumping ATPase present in high concentration as an integral membrane protein of the sarcoplasmic reticulum of muscle. This pump lowers the cytoplasmic calcium level and causes contraction to stop. Normal function of the pump seems to require a local phospholipid environment from which cholesterol is excluded.	http://cancerweb.ncl.ac.uk/omd/
CCAT	Calcium Carbonate ATPase	No definition available.	
CCOX	Cytochrome C-oxidase	An enzyme complex of the inner mitochondrial membrane that catalyses the reaction between ferrocytochrome c and oxygen to yield ferricytochrome c and water.	http://cancerweb.ncl.ac.uk/omd/
CEST	Cholinesterase	An enzyme found in blood and in various other tissues that catalyzes hydrolysis of choline esters, including acetylcholine.	
CHIT	Chitobiase	One of the lysosomal glycosidases called Chitobiase belongs to a special family of proteins that hydrolyze the polysaccharide chitin	
CP1A	Cytochrome P1A (CYP1A)	Electron transfer heme protein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P1A = pigment 1A	
CPSE	Creatine phosphokinase	An enzyme that is contained in skeletal muscle, smooth muscle and cardiac muscle. Creatine phosphokinase is released into the bloodstream in increased quantities if muscle is injured. Creatine phosphokinase can be fractionated so that specific measurements can be made for blood levels of creatine phosphokinase that comes exclusively from damaged heart muscle.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
CRKI	Creatine Kinase	An enzyme of vertebrate skeletal and myocardial muscle that catalyzes the transfer of a high-energy phosphate group from phosphocreatinine to adenosinediphosphate with the formation of adenosinetriphosphate and creatinine.	
CSYN	Citrate synthase	An enzyme of the lyase class that catalyzes the condensation of oxaloacetate and the acetyl group of coenzyme a to form of citrate and coenzyme a. This is the initial reaction in the tricarboxylic acid cycle.	
CTHP	Cathepsin	Intracellular proteolytic enzymes of animal tissues, such as cathepsin B, a lysosomal thiol proteinase, C, dipeptidyl peptidase, D, that has pepsin like specificity, G, similar to chymotrypsin, H, that possesses aminopeptidase activity, N, that attacks N terminal peptides of collagen and so on.	http://cancerweb.ncl.ac.uk/omd/
CTLS	Catalase	An enzyme that catalyzes the decomposition of hydrogen peroxide into molecular oxygen and water.	
CTMT	Catechol o-methyltransferase	An enzyme of the transferase class that catalyzes the transfer of a methyl group from s-adenosylmethionine to a catechol or catecholamine such as dopa, dopamine, norepinephrine, or epinephrine (converting to normetanephrine and metanephrine, respectively)	
CTNS	Chitinase	An enzyme which breaks down chitin, which is a polysaccharide that forms the hard outer shell of arthropods (insects, spiders, crustaceans, etc.), and the cell walls of fungi, and some algae.	http://cancerweb.ncl.ac.uk/omd/
CYAA	Cytochrome aa3	An enzyme complex of the inner mitochondrial membrane that catalyzes the reaction between ferrocytochrome c and oxygen to yield ferricytochrome c and water. It is associated with the pumping of protons and the resultant phosphorylation of ADP to ATP. The reaction is the terminal event in the electron transport scheme by which oxygen is used for fuel combustion. It is a part of Complex IV of the respiratory chain. A deficiency of one or more of the polypeptides of this complex results in neuronal loss in brain leading to psychomotor retardation and neurodegenerative disease.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
CYAM	Cystine aminopeptidase	Cystine an amino acid combined with Aminopeptidase which is an enzyme that removes the N terminal amino acid from a protein or peptide.	partial definition from: http://cancerweb.ncl.ac.uk/
CY2B	Cytochrome P2B (CYP2B)	One of the intracellular hemoprotein respiratory pigments that are enzymes functioning in electron transport as carriers of electrons	
CY2C	Cytochrome P-450 CYP2C	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYB5	Cytochrome B-5	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYCC	Cytochrome c + c1	Cytochrome c is a type of cytochrome, a protein which carries electrons, that is central to the process of respiration in mitochondria (an organelle found in eukaryotes which produces energy). Cytochrome c1 is the 30-kD membrane-bound c-type protein of mitochondria that functions as an electron donor to cytochrome c in the mitochondrial and bacterial respiratory chain.	http://cancerweb.ncl.ac.uk/omd/
CYP2	Cytochrome P2	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYP3	Cytochrome P3A	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
CYST	Cysteine Dioxygenase	No definition available.	

ENZ ENZYME EFFECT			
CYTA	Cytochrome P450A	A cytochrome when the heme contains a formyl side chain and a cytochrome with a protoheme IX prosthetic group.	(Dorland's Medical Dictionary)
CYTB	Cytochrome b	Cytochromes (electron-transporting proteins) with protoheme or a related haem as the prosthetic group. The prosthetic group is not covalently bound to the protein moiety.	http://cancerweb.ncl.ac.uk/omd/
CZSD	Copper Zinc superoxide dismutase	CuZn superoxide dismutase (CuZnSOD) catalyses the dismutation reaction of the total superoxide radical to molecular oxygen and hydrogen peroxide. This type of SOD is distinguished by its metal prosthetic group, Cu/Zn.	From Molecular Biophysics Group
DBHD	delta-5-3-beta hydroxysteroid dehydrogenase	Converts dehydroepiandrosterone to delta-4-androstene-3,17-dione	
DBHX	Dopamine beta-hydroxylase	This enzyme converts dopamine into norepinephrine	www.behavenet.com/capsules/neurochem/dopaminebetahydroxylase.htm
DEAS	Dehydroascorbate	Catalyzes the hydrolysis of the gamma lactone, dehydroascorbate, to diketogulonate.	http://cancerweb.ncl.ac.uk/omd/
DHYD	NADPH Dehydrogenase	A flavoprotein that reversibly oxidises NADPH to NADP and a reduced acceptor.	http://cancerweb.ncl.ac.uk/omd/
DSCA	Diethylsuccinase	No definition available.	
DTDP	DT-diaphorase	Prevents the redox cycling of certain compounds.	
ECOD	Ethoxycoumarin O-deethylase	No definition available.	
ENCL	Endocellulase	An enzyme that is able to break beta 1-4 bonds randomly along a cellulose strand.	
ENDM	Ethylmorphine-n-demethylase	No definition available.	
EPHY	Epoxide Hydrase	Also Epoxide Hydrolase No definition available.	
EPND	EPN (O-Ethyl-O-p-nitrophenyl phenylphosphonate) detoxification	No definition available.	

ENZ ENZYME EFFECT			
EROD	7-Ethoxyresorufin O-deethylase	No definition available.	
ESLI	Esterase lipase	Esterase is an enzyme that catalyses the hydrolysis of organic esters to release an alcohol or thiol and acid. Lipase is an enzyme that catalyses the hydrolysis of fats (monoglycerides, diglycerides and triglycerides) to glycerol and fatty acids.	http://cancerweb.ncl.ac.uk/omd/
ESST	Estradiol sulfotransferase	Estrogen sulfotransferase (EST) catalyzes the sulfation of estrogens such as estradiol and estrone, using the cofactor 3'-phosphoandenosine- 5'-phosphosulfate (PAPS).	http://www.epa.gov/endocrine/inventory/NIEH-091.html
ESTE	Esterase	Any group of enzymes that catalyze the synthesis and hydrolysis of esters.	
ESTS	Elastase	Serine protease that will digest elastin and collagen type IV, inhibited by α_1 protease inhibitor of plasma.	http://cancerweb.ncl.ac.uk/omd/
EXCL	Exocellulase	An enzyme that is able to cleave the glucose molecules from the ends of cellulose strands	
F16D	Fructose 1,6-diphosphatase	Fructose 1,6-diphosphatase (FDPase) (also termed fructose 1,6-bisphosphatase) is a focal enzyme in gluconeogenesis via its conversion of fructose 1,6-diphosphate (FDP) to fructose 6-phosphate (F-6-P), which permits endogenous glucose production from.	
F6PD	Fructose-6-phosphate dehydrogenase	enzyme that catalyses the dehydrogenation (oxidation) of d-glucose-6-phosphate	http://cancerweb.ncl.ac.uk/omd/
FDPA	Fructose-diphosphate Aldolase	No definition available.	
FESD	Iron superoxide dimutase	Fe superoxide dimutase (FeSOD) catalyses the dismutation reaction of the toxic superoxide radical to molecular oxygen and hydrogen peroxide. This type of SOD is distinguished by its metal prosthetic group, Fe.	From University of Leeds PROMISE database
FMOO	Flavin-containing monooxygenase (FMO)	A microsomal enzyme responsible for metabolism of some drugs.	http://www.fda.gov/cder/drug/drugReactions/default.htm
G6PD	Glucose-6-phosphate Dehydrogenase	No definition available.	

ENZ ENZYME EFFECT			
G6PT	Glucose-6-phosphatase	An enzyme that catalyzes the conversion of d-glucose 6-phosphate and water to d-glucose and orthophosphate.	
GCTA	Glucosyltransferase	An enzyme which transfers residues of glucose (a sugar) to acceptor molecules.	http://cancerweb.ncl.ac.uk/omd/
GENZ	Enzyme, General	Change in enzyme activity or enzyme protein levels.	
GGCS	gamma-Glutamylcysteine synthetase	An enzyme that catalyses the first step in glutathione biosynthesis, reacting l-glutamate, l-cysteine, and ATP to form gamma-glutamylcysteine, ADP, and orthophosphate; inhibited by thiols such as glutathione.	http://cancerweb.ncl.ac.uk/omd/
GGTP	gamma-glutamyl transpeptidase	An enzyme contained in the liver that plays a role in metabolism.	
GGTR	(Gamma) Γ -glutamyl Transferase*	No definition available.	
GLAD	Glutamic Acid Dehydrogenase	Enzymes that catalyze the reaction of l-glutamate, H ₂ O, and NAD ⁺ (or NADP ⁺ in some cases) producing alpha-ketoglutarate (2-oxoglutarate), ammonia, and NADH; in mammals, this is the prime contributor to oxidative deamination.	http://cancerweb.ncl.ac.uk/omd/
GLMC	Glutamate decarboxylase	A pyridoxal-phosphate protein that catalyzes the alpha-decarboxylation of l-glutamic acid to form gamma-aminobutyric acid and carbon dioxide. The enzyme is found in bacteria and in invertebrate and vertebrate nervous systems. It is the rate-limiting enzyme in determining gaba levels in normal nervous tissues. The brain enzyme also acts on l-cysteate, l-cysteine sulfinat, and l-aspartate.	http://cancerweb.ncl.ac.uk/
GLMD	Glutamate Dehydrogenase	An enzyme that catalyses the conversion of l-glutamate and water to 2-oxoglutarate and nh ₃ in the presence of NAD ⁺ .	http://cancerweb.ncl.ac.uk/
GLMS	Glutamine Synthetase	An enzyme which catalyzes the formation of glutamine from glutamic acid and ammonia, using ATP as a source of energy.	
GLMT	Glutamate transferase	No definition available.	

* GGT is also used for gamma glutamyl transpeptidase, a liver enzyme; prior to using the GGTR code verify that indeed GGT is used as the transferase in the current publication. The gamma glutamyl transpeptidase code is GGTP (proposed code).

ENZ ENZYME EFFECT			
GLPP	Glycogen phosphorylase	Enzyme that catalyses the sequential removal of glycosyl residues from glycogen to yield one glucose-1-phosphate per reaction. Its activity is controlled by phosphorylation (by phosphorylase kinase).	http://cancerweb.ncl.ac.uk/
GLPX	Glutathione Peroxidase	Glutathione peroxidase catalyzes the reduction of various organic hydroperoxides, as well as hydrogen peroxide, with glutathione as hydrogen donor.	
GLRE	Glutathione Reductase	An FAD containing enzyme, a dimer of 50 kD subunits. It catalyses the NADP dependent reduction of glutathione disulphide (GSSG) to glutathione (GSH). This is an essential reaction that maintains a GSH:GSSG ratio in the cytoplasm of _500:1.	http://cancerweb.ncl.ac.uk/
GLTR	Glucuronyl Transferase	No definition available.	
GLUR	(Beta) B-glucuronidase	No definition available.	
GLUT	Glutaminase	An enzyme.	
GLYD	Glyceraldehyde Dehydrogenase	No definition available.	
GMPP	Cyclic guanylic acid phosphodiesterase, cGMP PDE	An enzyme involved with the process of sight.	
GOTR	Glutamic-oxaloacetic Transaminase	An enzyme catalyzing the reversible transfer of an amine group from l-glutamic acid to oxaloacetic acid, forming alpha-ketoglutaric acid and l-aspartic acid; a diagnostic aid in viral hepatitis and in myocardial infarctions.	http://cancerweb.ncl.ac.uk/
GPIM	Glucose phosphate isomerase	An enzyme that converts glucose-6-phosphate to its positional isomer glucose-1-phosphate.	
GPTR	Glutamic Pyruvic Transaminase	An enzyme that is found primarily in the liver. It is released into the bloodstream as the result of liver damage. Also called the alanine aminotransferase (ALT) or serum glutamic pyruvic transaminase (SGPT).	http://cancerweb.ncl.ac.uk/

ENZ ENZYME EFFECT			
GSTR	Glutathione S-transferase	A class of enzymes that catalyze the reaction of glutathione with an acceptor molecule (e.g., an arene oxide) to form an S-substituted glutathione; a key step in detoxification of many substances; start of the mercapturic acid pathway.	http://cancerweb.ncl.ac.uk/
GTPD	Glutamyl transpeptidase	A membrane-bound glycoprotein necessary for the formation of mercapturic acids from glutathione conjugates. This enzyme has a number of acceptor amino acids and catalyzes three reactions.	
GULO	L-Gulonolactone oxidase	an enzyme which oxidizes l-gulonolactone to 2-keto-l-gulonolactone.	http://www.positivehealth.com/permit/Articles/Nutrition/vitc3.htm
GUPX	Guaiacol Peroxidase	Plant peroxidase. Guaiacol peroxidases have also been found in sterile root exudates and shown to oxidize Mn ²⁺ to form Mn ³⁺ chelates that are capable of decolorizing aromatic dyes. Peroxidase is commonly assayed by noting the development of color (A470) during the oxidation of a simple phenolic compound, guaiacol (ortho-methoxyphenol). For every four molecules of H ₂ O ₂ that are reduced, one molecule of tetraguaiacol is formed.	http://lbewww.epfl.ch/COST837/PhytoRemed2000/Files/Session2.pdf http://www-plb.ucdavis.edu/courses/s99/plb111/Enzymes.html
HAFS	N-Hydroxy-2-acetylaminofluorene sulfotransferase	A growth hormone dependant, liver enzyme involved in the microsomal metabolism of testosterone.	ECOREF 58214
HBDS	alpha-Hydroxybutyrate dehydrogenase	An enzyme.	
HCAR	beta-hydroxy-beta-methylglutaryl-CoA reductase	Also known as 3-Hydroxy-3-methylglutaryl-coenzyme A reductase. Beta-hydroxy-beta-methylglutaryl-reductase, an enzyme that catalyses the rate-limiting step of cholesterol biosynthesis, beta-hydroxy-beta-methylglutaryl-CoA + 2NADPH + 2H ⁺ → mevalonate + 2NADP ⁺ + coenzyme A.	http://cancerweb.ncl.ac.uk
HEPX	Heptachlor epoxidase	No definition available.	

ENZ ENZYME EFFECT			
HOXY	Heme oxygenase (Haem oxygenase)	A mixed function oxidase enzyme which during haemoglobin catabolism catalyses the degradation of haem to ferrous iron, carbon monoxide and biliverdin in the presence of molecular oxygen and reduced NADPH. The enzyme is induced by metals, particularly cobalt.	http://cancerweb.ncl.ac.uk
HPSE	Hydrogen Peroxidase	No definition available.	
HXBH	Hexobarbital Hydroxylase	Hexobarbital goes to 3-hydroxyhexobarbital	http://cancerweb.ncl.ac.uk
HXKN	Hexokinase	Enzyme responsible for glucose phosphorylation to glucose-6-phosphate.	
ICDH	Isocitrate dehydrogenase	An enzyme of the oxidoreductase class that catalyses the conversion of isocitrate and NAD ⁺ to yield 2-ketoglutarate, carbon dioxide, and NADH. It occurs in cell mitochondria. The enzyme requires magnesium, mn ²⁺ ; it is activated by ADP, citrate, and calcium, and inhibited by NADH, NADPH, and ATP.	http://cancerweb.ncl.ac.uk
ICLY	Isocitric lyase	An enzyme unique to the glyoxylate cycle which enables plant tissues to utilize triglycerides as an energy source.	ECOREF#73229
IPYR	Inorganic pyrophosphate	A chemical that can block bone mineral crystal formation.	http://www.homestead.com/hypophosphatasia/files/page8.html
ITMD	Iodothyronine 5'-monodeiodinase	An integral membrane bound selenoenzyme	ECOREF 48163
LADH	Lactate Dehydrogenase	An enzyme with 5 forms: LDH-1 is in the heart, its blood level can rise when heart muscle is damaged. Other forms can be found in the liver, brain, kidney, skeletal muscle and bone. Usually abbreviated as LDH.	http://cancerweb.ncl.ac.uk/omd/
LCDH	Lactic dehydrogenase	The enzyme that catalyses the formation and removal of lactate according to the equation: pyruvate + NADH = lactate NAD.	http://cancerweb.ncl.ac.uk/omd/
LDMD	Lactate Dehydrogenase/malic Dehydrogenase Ratio	No definition available.	

ENZ ENZYME EFFECT			
LEAM	Leucine aminopeptidase	An exopeptidase that removes neutral amino acid residues from the N terminus of proteins.	http://cancerweb.ncl.ac.uk/omd/
LGDD	L-Gulonate dehydrogenase and decarboxylase	Enzymes involved in the metabolism of L-ascorbic acid.	ECOREF 58373
LIPS	Lipase	Any of many enzymes that help break down lipids by catalyzing the fraction of an ester linkage.	
LNSE	L-Leucyl-beta-naphthylamide splitting enzyme	Frequently used to test for leucine aminopeptidase (ec 3.4.11.1) activity; hydrolyzes naphthylamides of leucine.	http://cancerweb.ncl.ac.uk/omd/
LPLP	Lipoprotein lipase	An enzyme of the hydrolase class that catalyses the reaction of triacylglycerol and water to yield diacylglycerol and a fatty acid anion. The enzyme hydrolyzes triacylglycerols in chylomicrons, very-low-density lipoproteins, low-density lipoproteins, and diacylglycerols. It occurs on capillary endothelial surfaces, especially in mammary, muscle, and adipose tissue. Genetic deficiency of the enzyme causes familial hyperlipoproteinaemia type I.	http://cancerweb.ncl.ac.uk/omd/
LPPR	Lipoperoxide	a product of the oxidation of unsaturated lipids	(http://64.233.167.104/search?q=cache:1gRkyBs7mKEJ:www.apsnet.org/phyto/PDFS/1999/0819-03R.pdf+Lipoperoxide&hl=en&start=93)
LTSE	Lactase	An enzyme that breaks down the milk sugar lactose.	http://cancerweb.ncl.ac.uk/omd/
LYSO	Lysyl oxidase	Extracellular enzyme that deaminates lysine and hydroxylysine residues in collagen or elastin to form aldehydes, that then interact with each other or with other lysyl side chains to form crosslinks.	http://cancerweb.ncl.ac.uk/omd/
LYZM	Lysozyme activity	Enzyme found in the secretions (tears) of the lacrimal glands of animals and in nasal mucus, gastric secretions, and egg white. Discovered in 1921 by Sir Alexander Fleming, lysozyme catalyzes the breakdown of certain carbohydrates found in the cell walls of certain bacteria (e.g., cocci). It thus functions, in the case of lacrimal fluid.	

ENZ ENZYME EFFECT			
MADH	Malic Dehydrogenase	An enzyme that catalyses the conversion of (s)-malate and NAD ⁺ to oxaloacetate and NADH.	http://cancerweb.ncl.ac.uk/
MALE	Malic Enzyme	No definition available.	
MAOA	Mono Amino Oxidase	No definition available.	
MCAT	Magnesium Carbonate ATPase	No definition available.	
MCOD	Methoxycoumarin O-dealkylase	No definition available.	
MG6P	Microsomal Glucose 6-phosphatase	No definition available.	
MGAT	Magnesium ATPase	No definition available.	
MLCB	Malathion Carboxylesterase	No definition available.	
MLDA	Malate dehydrogenase	An enzyme that catalyses the conversion of (s)-malate and NAD ⁺ to oxaloacetate and NADH.	http://cancerweb.ncl.ac.uk
MLTS	Maltase	An enzyme that hydrolyzes maltose (and the glucose trimer maltotriose) to glucose, during the enzymic breakdown of starch.	http://cancerweb.ncl.ac.uk
MNSD	Manganese Superoxide Dismutase	No definition available.	
MROD	Methoxyresorufin-o-deethylase	No definition available.	
MUDH	Multiple Dehydrogenases (Measured Total Produced by Soil Microorganisms)	No definition available.	
NABH	N-acetyl-beta-hexosaminidase	No definition available.	
NAAT	Sodium adenosine triphosphatase	No definition available.	

ENZ ENZYME EFFECT			
NACR	NADH-cyt c reductase	Nicotinamide adenine dinucleotide cytochrome C reductase.	
NADH	Nicotinamide adinine dinucleotide (reduced) (NADH)	Activated form of the B vitamin niacin, the first of 5 enzyme complexes of the electron transport chain.	
NADN	Nicotinamide adinine dinucleotide (oxidized) (NAD)	The oxidized (burned) coenzyme form of Vitamin B3.	
NAGD	N-Acetyl-beta-d-glucosamimidase	An enzyme.	
NAOX	NADPH Oxidase	A plasma membrane-associated enzyme complex that catalyses the univalent reduction of oxygen using NADPH as an electron donor. The superoxide anion formed acts as an oxidant in the phagocyte microbicidal system, proceeding through a series of electron transfer reactions that form the respiratory burst. Various genetic defects in the system result in chronic granulomatous disease (granulomatous disease, chronic).	http://cancerweb.ncl.ac.uk/omd/
NCB5	NADH cytochrome B5 reductase	Electron transport proteins found in animals, plants and yeasts.	
NCCR	NADPH Cytochrome C Reductase	Nicotinamide adenine dinucleotide phosphate cytochrome C reductase.	
NCTR	Nicotinamide transferase	Catalyses reversibly the methylation of nicotinamide in the presence of s-adenosylmethionine to yield 1-methylnicotinamide and s-adenosylhomocysteine.	http://cancerweb.ncl.ac.uk/omd/
NDCC	NADH Cytochrome C Reductase	Nicotinamide adenine dinucleotide cytochrome C reductase.	
NDDP	NADH-DT-diaphorase	No definition available.	
NDFC	NADH ferricyanide reductase	Nicotinamide adenine dinucleotide phosphate ferricyanide reductase.	
NDFH	NADPH-ferrihemoprotein reductase	No definition available.	

ENZ ENZYME EFFECT			
NDFR	NADH Ferrichrome Reductase	Nicotinamide adenine dinucleotide ferrichrome reductase.	
NDMT	N-Demethylase	That transfers a methyl group from S adenosyl methionine to a substrate. most commonly encountered in bacterial chemotaxis where the methyl accepting chemotaxis proteins (MCPs) become methylated in the course of adaptation. Also known as methyltransferase.	
NDPD	NADPH-Diaphorase (Nicotinamide Adenine Dinucleotide phosphate Diaphorase)	No definition available.	
NHCR	NADH cytochrome C reductase	No definition available.	
NITG	Nitrogenase Activity	Nitrogenase is a member of a family of enzymes found in nitrogen fixing bacteria that reduce nitrogen to ammonia (also ethylene to acetylene).	http://cancerweb.ncl.ac.uk
NKAT	Sodium Potassium ATPase	A major transport protein of the plasma membrane. A multi unit enzyme, it moves 3 sodium ions out of the cell and 2 potassium ions in, for each ATP hydrolyzed. The sodium gradient established is used for several purposes (see facilitated diffusion, action potential), while the potassium gradient is dissipated through the potassium leak channel. Must not be confused with a sodium channel.	http://cancerweb.ncl.ac.uk
NNDE	Nitrosamine-N-demethylase	An enzyme.	
NRDT	Nitrate Reductase	No definition available.	
NRED	Nitroreductase	Enzymes which reduce nitro groups.	http://cancerweb.ncl.ac.uk/omd/
O1LH	omega-1-laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306
O2LH	omega-2-laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306
OLHD	omega laurate hydroxylase	Steroid metabolizing enzyme.	ECOREF 62306

ENZ ENZYME EFFECT			
ORCT	Ornithine Carbamoyl Transferase	No definition available.	
ORDC	Ornithine decarboxylase	The enzyme that converts ornithine to putrescine (dibasic amine) by decarboxylation. Rate limiting in the synthesis of the polyamines spermidine and spermine that regulate DNA synthesis.	http://cancerweb.ncl.ac.uk/omd/
P1A1	Cytochrome P-450 1A1	An isoenzyme translation product of the P450 subfamily 1A CYP1A gene.	ECOREF 61237
P420	Cytochrome P-420	Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; found in the endoplasmic reticulum that acts as an intermediary in MFO reactions.	
P450	Cytochrome P-450	Isoenzyme, Electron transfer hemeprotein having a mode of action in which the transfer of a single electron is effected by the reversible valence change of the central iron atom of the heme prosthetic group; P450 - 450 nm maximum absorption - found in the liver endoplasmic reticular, the renal brush border the outer membrane of the adrenal mitochondria; serves as an intermediate electron carrier in reactions catalyzed by some monooxygenases; active in detoxification of xenobiotics by activating the molecular oxygen for an attack on the substrate	
450C	P450c	No definition available.	
C2D6	cytochrome p-450 cyp2d6	A polymorphic enzyme that catalyses the hydroxylation of debrisoquine. It also metabolises several antidepressants and neuroleptics. This enzyme is deficient in up to 10 percent of the population.	http://cancerweb.ncl.ac.uk/omd/
PBES	Phenyl Benzoate Esterase	No definition available.	
PBHD	Pentobarbital Hydroxylase	No definition available.	
PCCX	Picolinate carboxylase	An enzyme.	

ENZ ENZYME EFFECT			
PCHE	Pseudocholinesterase	<p>An enzyme involved in the breakdown of acetylcholine. Associated with acetylcholinesterase. Acetylcholinesterase is found in nerve tissue while pseudocholinesterase is found primarily in the liver.</p> <p>Measurement of pseudocholinesterase may be performed as a screening tool prior to the administration of electroconvulsive therapy. It is also useful in identifying organophosphate toxicity or congenital enzyme deficiencies.</p>	
PCLX	Picoline carboxylase	One of several carboxy-lyases, trivially named carboxylases or decarboxylases (EC subclass 4.1.1), catalyzing the addition of CO ₂ to all or part of another molecule to create an additional -COOH group (e.g., ribulose-1,5-bisphosphate carboxylase).	
PCOD	Propoxycoumarin O-dealkylase	No definition available.	
PCTN	Pectinase activity	Random hydrolysis of 1,4- α -D-galactosiduronic linkages in pectate and other galacturonans Also called Polygalacturonase or Pectin depolymerase.	http://www.expasy.ch/cgi-bin/nicezyme.pl?3.2.1.15
PFRC	Phosphofructokinase	An enzyme that functions in carbohydrate metabolism and especially in glycolysis by catalyzing the transfer of a second phosphate (as from ATP) to fructose	
PHBG	Porphobilinogen	Chemical name: 1H-Pyrrole-3-propanoic acid, 5-(aminomethyl)-4-(carboxymethyl) an enzyme used by the body to make important substances such as the molecule call heme	http://cancerweb.ncl.ac.uk/omd/ http://health.allrefer.com/health/pbg-info.html
PKSC	Protein kinase C	An enzyme that phosphorylates proteins on serine or threonine residues in the presence of physiological concentrations of calcium and membrane phospholipids.	http://cancerweb.ncl.ac.uk/omd/
PHLA	Phosphorylase A	The phosphorylated and more active form of phosphorylase that functions as a regulatory enzyme during glycogen breakdown. The phosphate groups are hydrolytically removed by phosphorylase phosphatase to form phosphorylase b and orthophosphate.	

ENZ ENZYME EFFECT			
PHLC	Phospholipase C	An enzyme found in the alpha-toxin of clostridium welchii and other strains of clostridia and bacilli. It hydrolyzes glycerophosphatidates with the formation of 1,2-diacylglycerol and a phosphorylated nitrogenous base such as choline.	http://cancerweb.ncl.ac.uk/omd/
PHLD	Phenoloxidase	An enzyme oxidizing benzenediols to semiquinones with O ₂ .	http://cancerweb.ncl.ac.uk/omd/
PLA2	Phospholipase A2	An enzyme that catalyses the hydrolysis of a lecithin to a lysolecithin by removing the 2-acyl group; also acts on other phospholipids by removing a fatty acid from the 2-position; this enzyme has an important role in prostaglandin and leukotriene biosynthesis.	http://cancerweb.ncl.ac.uk/omd/
PNAC	para-Nitrophenyl Acetate Carboxylsterase	No definition available.	
PNAD	P-nitroanisoie Demethylase	No definition available.	
PNMT	Phenylethanolamine N-methyl transferase	A methyltransferase that catalyses the reaction of sadenosyl-l-methionine and phenylethanolamine to yield S-adenosyl-l-homocysteine and n-methylphenylethanolamine. It can act on various phenylethanolamines and converts norepinephrine into epinephrine.	http://cancerweb.ncl.ac.uk/omd/
PNOD	para-Nitrophenetole-o-deethylase	No definition available.	
PODA	Peroxidase (Pod) Enzyme Activity	An enzyme that catalyzes reactions in which hydrogen peroxide is an electron acceptor.	
PPDE	Phosphodiesterase	An enzyme that cleaves phosphodiesteres to give a phosphomonoester and a free hydroxyl group.	http://cancerweb.ncl.ac.uk/omd/
PPHL	Phosphorylase	Enzyme that catalyses the sequential removal of glycosyl residues from glycogen to yield one glucose-1-phosphate per reaction. Its activity is controlled by phosphorylation (by phosphorylase kinase).	http://cancerweb.ncl.ac.uk/omd/
PPOX	Polyphenol oxidase	Catechol oxidase - any group of enzymes of the oxidoreductase class that catalyze the oxidation of catechols to 1,2-benzoquinones. The group includes enzymes called also diphenol oxidase or polyphenol oxidase, based on their substrates	Dorland's Medical Dictionary

ENZ ENZYME EFFECT			
PPPA	Phosphoenolpyruvic acid	Also known as Phosphoenolpyruvate carboxykinase. An enzyme that catalyses the reaction of oxaloacetate and GTP to form phosphoenolpyruvic acid, CO ₂ , and GDP; a key enzyme in gluconeogenesis; the biosynthesis of this enzyme is decreased by insulin.	http://cancerweb.ncl.ac.uk/omd/
PPPC	Phosphoenolpyruvate carboxylase	An enzyme with high affinity for carbon dioxide. It catalyzes irreversibly the formation of oxaloacetate from phosphoenolpyruvate and carbon dioxide. This fixation of carbon dioxide in several bacteria and some plants is the first step in the biosynthesis of glucose.	
PPSN	Pepsin	any of several enzymes of the gastric juice that catalyze the hydrolysis of proteins to form polypeptides.	www.mercksource.com
PROD	Pentylresorufin O-deethylase	No definition available.	
PRTA	Proteolytic activity	An enzyme that promotes proteolysis (= the splitting of proteins by hydrolysis of the peptide bonds with formation of smaller polypeptides).	
PRTS	Protease	An enzyme that digests proteins.	
PSPM	Phosphoamidase	An enzyme catalyzing the hydrolysis of phosphorus-nitrogen bonds, notably the hydrolysis of N-phosphocreatine to creatine and orthophosphate.	http://cancerweb.ncl.ac.uk/omd/
PYKN	Pyruvate kinase	A phosphotransferase that catalyzes reversibly the phosphorylation of pyruvate to phosphoenolpyruvate in the presence of ATP. It has four isozymes (l, r, m1, and m2).	
PYRC	Pyruvate carboxylase	An enzyme of the ligase class that catalyzes the irreversible carboxylation of pyruvate to form oxaloacetate. The enzyme is a mitochondrial protein containing a biotin prosthetic group, requiring magnesium or manganese and acetyl CoA, and occurs in l	
QNPT	Quinolate phosphoribosyltransferase	An enzyme.	
QORD	Quinone oxidoreductase	A flavoprotein similar to NADH dehydrogenase (quinone), but oxidizing NADPH.	Biology-online.org

ENZ ENZYME EFFECT			
RBPC	Ribulose-1,5-bisphosphate carboxylase	A copper protein that catalyzes the formation of 2 moles of 3-phosphoglycerate from ribulose 1,5-bisphosphate in the presence of carbon dioxide and is responsible for carbon dioxide fixation in photosynthesis.	
REHL	Retinyl Ester Hydrolase	the liver enzymes that hydrolyze retinyl esters, the form in which newly absorbed dietary vitamin A is delivered to the liver. These enzymes (retinyl ester hydrolases or REHs) are important in both the uptake of dietary vitamin A by the liver and in the mobilization of stored vitamin A from the liver when dietary input is inadequate to meet the body's need for this essential nutrient.	http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=173015
RNIN	Renin	An enzyme of the hydrolase class that catalyses cleavage of the leucine leucine bond in angiotensin to generate angiotensin. The enzyme is synthesized as inactive prorenin in the kidney and released into the blood in the active form in response to va.	
RNPH	5'-Ribonucleotide phosphohydrolase	Common name: 5'-nucleotidase. A glycoprotein enzyme present in various organs and in many cells. The enzyme catalyses the hydrolysis of a 5'-ribonucleotide to a ribonucleoside and orthophosphate in the presence of water. It is cation-dependent and exists in a membrane-bound and soluble form.	http://cancerweb.ncl.ac.uk/omd/
RNSE	Rnase (ribonuclease)	An enzyme that catalyzes the depolymerization of ribonucleic acid.	
RUBI	Ribulose bisphosphate carboxylase/oxygenase (Rubisco)	A rate regulating-enzyme in photosynthesis and a key enzyme in nitrogen metabolism.	http://www.irri.org/IRRN24-1Minireviews.pdf
SASE	Arylsulfatase	An enzyme that cleaves phenol sulfates, including cerebroside sulfates. Some arylsulfatases are inhibited by sulfate (type II) and some are not (type I). Synonym: sulfatase.	http://cancerweb.ncl.ac.uk/omd/
SBDH	Sorbitol Dehydrogenase	No definition available.	
SCDH	Succinate Dehydrogenase	No definition available.	

ENZ ENZYME EFFECT			
SFTA	Sulfotransferase	Generic term for enzymes in EC sub-subclass 2.8.2 catalyzing the transfer of a sulfate group from 3'-phosphoadenylyl sulfate (active sulfate) to the hydroxyl group of an acceptor, producing the sulfated derivative and 3'-phosphoadenosine 5'-phosphate	
SGOT	Serum Glutamate Oxalo Acetate Transaminase	No definition available.	
SGPT	Serum Glutamic Pyruvic Transaminase	No definition available.	
SODA	Super Oxide Dismutase (SOD) Enzyme Activity	No definition available.	
SPGX	Selenium dependent glutathion peroxidase	Selenium has a main role as an antioxidant in the enzyme selenium-glutathione-peroxidase.	http://www.uphs.upenn.edu/ency/article/002414.htm
SSAR	Serum Glutamate Oxalo Acetate Transaminase and Serum Glutamic Pyruvic Transaminase to Alkaline Phosphatase ratio (SGOT & SPGT to ALPH ratio)	Ratio of Serum Glutamate Oxalo Acetate Transaminase and Serum Glutamic Pyruvic Transaminase to Alkaline Phosphatase	
SSRA	Serum Glutamate Oxalo Acetate Transaminase to Serum Glutamic Pyruvic Transaminase ratio (SGOT to SPGT ratio)	Ratio of Serum Glutamate Oxalo Acetate Transaminase to Serum Glutamic Pyruvic Transaminase.	
SUPS	Sucrose phosphate synthase	A type 2a phosphoprotein phosphatase.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
T16A	Testosterone 16-alpha hydroxylase	An enzyme that acts on testosterone at the 16-alpha position.	
T3GL	Triiodotyrosine (T3) Glucuronidation	Glucuronidation represents a major means of metabolizing hormones so that they can then be excreted. In this case triiodotyrosine (T3).	http://www.anapsid.org/cnd/hormones/glucuronidation.html
T4GL	L-Thyroxine (T4) Glucuronidation	Glucuronidation represents a major means of metabolizing hormones so that they can then be excreted. In this case L-Thyroxine (T4).	http://www.anapsid.org/cnd/hormones/glucuronidation.html
TAMN	Transaminase	One of a group of enzymes that catalyze the transfer of the amino group of an amino acid to a keto acid to form another amino acid. Also known as aminotransferase.	
TATS	Tyrosine aminotransferase	An enzyme that catalyses the reversible reaction of l-tyrosine and alpha-ketoglutarate producing p-hydroxyphenylpyruvate and l-glutamate; this enzyme catalyses a step in l-phenylalanine and l-tyrosine catabolism.	
TBHY	Testosterone 16 beta-hydroxylase	An enzyme that acts on testosterone at the 16-beta position.	
THMN	Thiaminase	1. An enzyme present in raw fish that destroys thiamin and may produce thiamin deficiency in animals on a diet largely composed of raw fish. 2. A hydrolase cleaving thiamin into a pyrimidine moiety (i.e., 2-methyl-4-amino-5-hydroxymethylpyrimidine) and a thiazole moiety (i.e., 4-methyl-5-(2'-hydroxyethyl)-thiazole); the pyrimidine moiety may appear in the urine as pyramin.	
THTR	Thiol Transferase	Reduces disulfide groups via thiol transfer; proposed to catalyze transfer of organomercurial from one thiol complex to another	http://cancerweb.ncl.ac.uk/omd/
TPHX	Tryptophan hydroxylase	Tryptophan hydroxylase (TPH) is the rate-limiting enzyme in the biosynthesis of serotonin and an important component of melatonin biosynthesis.	
TPOX	Tryptophan oxidase	A protohemoprotein. Forms formylkynurenine from l-tryptophan and molecular oxygen.	http://cancerweb.ncl.ac.uk/omd/
TRBA	Tributyrase	No definition available.	

ENZ ENZYME EFFECT			
TRIE	Triacetin Esterase	No definition available.	
TSHX	Tyrosine hydroxylase	Enzyme required for the synthesis of the neurotransmitters noradrenaline and dopamine.	http://cancerweb.ncl.ac.uk/omd/
TSKT	Transketolase	A thiamine pyrophosphate containing enzyme that links the pentose phosphate pathway with glycolysis by converting pentoses to hexoses.	Lindqvist, Y., et. al. (1992) EMBO J. 11, 2373-2379. and http://cancerweb.ncl.ac.uk/omd/
TT2A	Testosterone 2-alpha hydroxylase	From mouse liver, member of the murine cytochrome p450 2d family; amino-terminal amino acid sequence given in first source Registry. Synonym: cytochrome p450 2alpha, cytochrome p-450 2alpha, androstenedione 2alpha-hydroxylase, androgen 2alpha-hydroxylase.	http://cancerweb.ncl.ac.uk/omd/
TT6A	Testosterone 6-alpha hydroxylase	An enzyme that acts on testosterone at the 6-alpha position.	
TT6B	Testosterone 6-beta-hydroxylase	Pcn2 is an allelic variant form (2 amino acid alterations); for cyp3a2, consider also lidocaine n-deethylase. Synonyms: cytochrome p450(6 beta), cytochrome p-450 6b-1(pb1), cyp6b1, testosterone 6beta-hydroxylase, cyt p450 6beta-3, cytochrome p450(pcn2), 6beta-a gene product, cyp3a2, cyp6b3 (http://cancerweb.ncl.ac.uk)	
TT7A	Testosterone 7alpha-hydroxylase (cyp2A1)	An enzyme that acts on testosterone at the 7-alpha position.	
TTRH	Testosterone hydroxylase	An enzyme that acts at positions 6 alpha, 7 alpha and 16 alpha of testosterone.	
TUOX	Thiourea oxygenase	An enzyme.	
TYKN	Thymidine kinase	Of pyrimidine salvage, catalyzing phosphorylation of thymine deoxyriboside to form its 5' phosphate, the nucleotide thymidylate.	http://cancerweb.ncl.ac.uk/omd/

ENZ ENZYME EFFECT			
UDGT	UDP glucuronosyltransferase	The enzymatic addition of sugars to fat-soluble chemicals is an important process that increases their solubility in water and aids in their excretion. In mammals, glucuronic acid is the main sugar that is used to prevent the accumulation of waste products of metabolism and fat-soluble chemicals from the environment to toxic levels in the body. The UDP glucuronosyltransferases that carry out this reaction are part of a super family of UDP glycosyltransferases found in animals, plants and bacteria.	www.unisa.edu.au/pharm_medsci/Gluc_trans/intro.htm
UDPT	Uridine Diphosphate (Udp) Glucuronyl Transferase	No definition available.	
URON	Uronolactonase	Also known as glucuronolactonase, an enzyme involve in the metabolism of L-ascorbic acid.	ECOREF 58373
URSE	Urease Activity	An enzyme that breaks urea down into carbon dioxide and ammonia, its typically used to measure urea concentrations.	http://cancerweb.ncl.ac.uk/omd/
VAAM	Valine aminopeptidase	Valine, an amino acid combined with aminopeptidase which is an enzyme that removes the N terminal amino acid from a protein or peptide.	partial definition from http://cancerweb.ncl.ac.uk/omd/
XBME	Xenobiotic metabolizing enzymes	Enzymes that metabolize synthetic compounds not normally found in nature. Examples of xenobiotic compounds include; pesticides, herbicides, insecticides, fungicides, detergents, plastics and other synthetic polymers.	
XODA	Xanthine Oxidase	Dehydrogenases involved in conversion of hypoxanthine to xanthine and xanthine to uric acid, as the final catabolism of purines. Deficient in the human disease xanthinuria.	http://cancerweb.ncl.ac.uk/omd/

HRM HORMONE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes

HRM HORMONE EFFECT			
IL1B	Interleukin-1 beta	A soluble protein (17 kD: 152 amino acids) secreted by monocytes, macrophages or accessory cells involved in the activation of both T-lymphocytes and B lymphocytes and potentiates their response to antigens or mitogens. Its biological effects include the ability to replace macrophage requirements for T-cell activation, as well as affecting a wide range of other cell types. at least two IL-1 genes are active and alpha and beta forms of IL-1 are recognised. It is released early in an immune system response by monocytes and macrophages. It stimulates T-cell proliferation and protein synthesis. Another effect of IL-1 is that it causes fever.	http://cancerweb.ncl.ac.uk/omd/
ILK6	Interleukin-6	A cytokine that stimulates the growth and differentiation of human B-cells and is also a growth factor for hybridomas and plasmacytomas. It is produced by many different cells including T-cells, monocytes, and fibroblasts. A single chain 25 kD cytokine originally described as a pre B-cell growth factor, now known to have effects on a number of other cells including T-cells which are also stimulated to proliferate. An inducer of acute phase proteins and a colony-stimulating factor acting on mouse bone marrow.	http://cancerweb.ncl.ac.uk/omd/
11BT	11beta - hydroxytestosterone	17 beta-hydroxy-4-androsten-3-ones. Testosterone derivatives formed by the substitution of one or more hydroxyl groups in any position.	http://cancerweb.ncl.ac.uk/omd/
11DC	11-Deoxycortisol	The immediate precursor of cortisol, accumulates in the peripheral circulation when there is a deficiency of adrenal 11b-hydroxylase activity.	http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html
15BH	15 Beta-hydroxytestosterone	An oxidative product of testosterone.	ECOTOX
16AT	16alpha-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	http://cancerweb.ncl.ac.uk/omd/
16BH	16 beta-Hydroxytestosterone	An oxidative product of testosterone.	ECOTOX

HRM HORMONE EFFECT			
18HC	18-Hydroxycortico sterone	A group of corticosteroids carrying hydroxy groups, usually in the 11- or 17- positions. They comprise the bulk of the corticosteroids used systemically. As they are relatively insoluble in water, salts of various esterified forms are often used for injections or solutions.	http://cancerweb.ncl.ac.uk/omd/
18HD	18-Hydroxy-11-deoxycorticoste rone	A potassium retaining hormone.	
19HD	19-Hydroxytestost erone	An oxidative product of testosterone.	ECOTOX
4TO3	L-thyroxine outer ring 5'- monodeiodinati on	The conversion of L-Thyroxine (T4) to triiodotyrosine (T3) where the T4 enters target cells where it undergoes outer ring 5'-monodeiodination to T3.	ECOREF#73485
6BTT	6beta-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	http://cancerweb.ncl.ac.uk/omd/
7ATT	7alpha-Testosterone	Male sex hormone (androgen) secreted by the interstitial cells of the testis of mammals and responsible for triggering the development of sperm and of many secondary sexual characteristics.	http://cancerweb.ncl.ac.uk/omd/
ABSA	Abscisic Acid	A common plant hormone that inhibits plant growth	
ACTH	Adrenocorticotr opic hormone	A hormone that stimulates adrenal steroid biosynthesis.	
ADDL	Androstenediol	A steroid metabolite.	http://cancerweb.ncl.ac.uk/omd/
ADDN	Androstenedio ne	An androgenic steroid produced by the testis, adrenal cortex and ovary. It occurs in nature as a 4-delta-androstenedione and 5-delta-androstenedione. Androstenediones can be converted metabolically to testosterone and other androgens.	http://cancerweb.ncl.ac.uk/omd/
AHPG	17 alpha-Hydroxyproges terone	Also known as: 17a-Hydroxy-4-pregnen-3,20-dione. A precursor of the androgens and adrenocortical hormones.	http://cancerweb.ncl.ac.uk/omd/

HRM HORMONE EFFECT			
ALDS	Aldosterone	A steroid hormone produced by the adrenal cortex, that controls salt and water balance in the kidney. Abnormally high levels of this hormone cause sodium retention, high blood pressure, heart rhythm irregularities and possibly paralysis.	http://cancerweb.ncl.ac.uk/omd/
AMSH	Alpha-Melanocyte Stimulating Hormone	Alpha-Melanocyte Stimulating Hormone (alpha-MSH) is produced by an intermediate lobe of the pituitary gland. Its secretion causes a dramatic darkening of the skin.	
ANDR	Androgen	Substances that conduces masculinization; such as testicular hormones.	
AUXN	Auxin	A plant hormone.	
BDPG	17,20beta-Dihydroxy-4-pregnen-3-one	A female preovulatory hormone.	
<BOES> Code ESDL	beta-Oestradiol (E2)	A hormone (272 D) synthesized mainly in the ovary, but also in the placenta, testis and possibly adrenal cortex. A potent oestrogen.	http://cancerweb.ncl.ac.uk/omd/
CORT	Corticosterone (Corticoid)	A steroid produced by the adrenal cortex that stimulates carbohydrate synthesis and protein breakdown.	
CRCT	Cortisol and cortisone	Cortisol is a steroid hormone that is released from the zona fasciculata of the adrenal cortex in response to stress. Cortisone: Derived from cortisol and with similar physiological actions.	http://cancerweb.ncl.ac.uk/omd/
CRTS	Cortisol	Cortisol is a steroid hormone that is released from the zona fasciculata of the adrenal cortex in response to stress.	
CTCL	Catecholamine	A type of biogenic amine derived from tyramine, characterized as alkylamino derivatives of o dihydroxybenzene. Catecholamines include adrenaline, noradrenaline and dopamine, with roles as hormones and neurotransmitters.	
CTKY	Cytokines	Cytokines are small secreted proteins which mediate and regulate immunity, inflammation, and hematopoiesis.	http://microvet.arizona.edu/Courses/MIC419/Tutorials/cytokines.html
CYTK	Cytokinin	Class of plant hormones that induce cell division	

HRM HORMONE EFFECT			
DECL	11-Deoxycortisol glucuronide	11-Deoxycortisol is the immediate precursor of cortisol, accumulates in the peripheral circulation when there is a deficiency of adrenal 11b-hydroxylase activity. (http://www.sas-centre.org/hormones/hormpages/hormone11deoxycortisol.html) Glucuronide is a substance produced by attaching glucuronic acid to another substance with glycosidic bonds	http://cancerweb.ncl.ac.uk/omd/
DHTR	Dihydrotestosterone	The synthetic form is stanolone. (5alpha,17beta)-17-Hydroxyandrostane-3-one	Dorland's medical dictionary
DITS	Diiodotyrosine	One of the hormones that are combined to create T3 (triiodotyrosine), Diiodotyrosine (DIT); tyrosine is iodinated twice.	
DOCS	Deoxycorticosterone	Also known as 11-Deoxycorticosterone; 21-hydroxypregn-4-ene-3,20-dione. An adrenocortical steroid, principally a biosynthetic precursor of corticosterone and possibly aldosterone, that rarely appears in adrenocortical secretions; a potent mineralocorticoid with no appreciable glucocorticoid activity.	http://cancerweb.ncl.ac.uk/omd/
DOPA	Dopamine	A monoamine formed in the body; an intermediate product in the synthesis of norepinephrine, acts as a neurotransmitter in the CNS.	
ELTR	17beta-estradiol:Testosterone ratio	The ratio of the amount of 17beta-estradiol to the amount of testosterone in an organism.	
EPIN	Epinephrine	Secreted by the adrenal medulla and acts to increase blood pressure due to the stimulation of heart action and constriction of blood vessels (adrenaline).	
ESDL	17-beta Estradiol	An estrogenic hormone produced by follicle cells of the ovary; provokes estrus and proliferation of the human endometrium.	
ESTR	Estrogen (oestrogen)	Any of various natural or synthetic substances possessing the biological activity of estrus-producing hormones.	
FOSH	Follicle stimulating hormone (FSH)	One of the most important hormones involved in the natural menstrual cycle as well as in pharmacological (drug-induced) stimulation of the ovaries. It is the main hormone involved in producing mature eggs.	

HRM HORMONE EFFECT			
G11K	Glucuronidated 11-Ketotestosterone	A metabolite of 11-Ketotestosterone	ECOTOX staff
GBDP	Glucoronidated 17,20beta-Dihydroxy-4-pregnen-3-one	A female preovulatory hormone with glucoronidate.	
GCRT	Glucocorticoid	Corticosteroid substances (drugs or hormones) that are involved in carbohydrate metabolism by promoting gluconeogenesis and the formation of glycogen at the expense of lipid and protein synthesis. They are steroid based and possess anti-inflammatory and immunosuppressive properties. Glucocorticoids are also produced normally by the adrenal cortex and provide for the response to stress.	http://cancerweb.ncl.ac.uk/omd/
GHRM	Hormone, General Changes in	Change in hormone concentrations.	
GIBB	Gibberellin	A plant hormone.	
GNTF	Gonadotropin	A substance that acts to stimulate the gonads.	
GRHM	Gonadotropin releasing hormone	The peptide hormone that control reproductive function. It produced and released by the hypothalamus and controls the production and release of gonadotrophins from the pituitary gland. It causes the production of luteinising hormone and follicle stimulating hormone.	http://cancerweb.ncl.ac.uk/omd/
GTHH	Growth hormone	A polypeptide hormone secreted by the anterior pituitary which promotes an increase in body size. Any hormone that regulates growth in plants and animals.	
INHI	Inhibin	Polypeptide hormone secreted by the hypophysis, that selectively suppresses the secretion of pituitary follicle stimulating hormone. The molecule has two subunits (14 & 18 kD) and is a product of the gene family that includes TGF. There are two forms, __A and __B, the _ subunit being shared with activin. Inhibin is now, on the basis of gene knockout experiments, considered to be a tumor suppressor, the key gene being that for inhibin.	http://cancerweb.ncl.ac.uk/omd/

HRM HORMONE EFFECT			
INSL	Insulin	A polypeptide hormone found in both vertebrates and invertebrates. Secreted by the cells of the pancreas in response to high blood sugar levels, it induces hypoglycemia. Defective secretion of insulin is the cause of diabetes mellitus. Insulin is also a mitogen, has sequence homologies with other growth factors and is a frequent addition to cell culture media for demanding cell types.	http://cancerweb.ncl.ac.uk/omd/
IPTH	Immunoreactive parathyroid hormone	No definition available.	
KTST	11-Ketotestosterone	Steroid hormone produced by the testes, along with testosterone responsible for the appearance of male secondary sex characteristics.	
LUTH	Luteinizing hormone (LH)	Stimulates secretion of sex steroids from the gonads.	
ME4T	Total 4a-Methylsterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
MITS	Monoiodotyrosine	One of the hormones that are combined to create T3 (triiodotyrosine), Monoiodotyrosine (MIT); tyrosine becomes iodinated.	
NORD	Noradrenaline	Catecholamine neurohormone, the neurotransmitter of most of the sympathetic nervous system (of so called adrenergic neurons): binds more strongly to adrenergic receptors. Stored and released from chromaffin cells of the adrenal medulla.	http://cancerweb.ncl.ac.uk/omd/
NORE	Norepinephrine	Secreted by chromaffin cells of the adrenal medulla; acts as a vasoconstrictor and mediates transmission of sympathetic nerve impulses.	
PRGN	Pregnenolone	An unsaturated hydroxy steroid ketone C ₂₁ H ₃₂ O ₂ that is formed by the oxidation of steroids (as cholesterol) and yields progesterone on dehydrogenation.	http://www.m-w.com/
PRLC	Prolactin	A protein hormone produced by the adenohypophysis; stimulates lactation and promotes functional activity of the corpus luteum.	
PRGS	Progesterone	A steroid produced in the corpus luteum, placenta, testes, and adrenals; plays an important physiological role in the luteal phase of the menstrual cycle and in the maintenance of pregnancy.	

HRM HORMONE EFFECT			
S11K	Sulfated 11-Ketotestosterone	A metabolite of 11-Ketotestosterone	ECOTOX staff
SBDP	Sulfated 17,20-beta-Dihydroxy-4-pregnen-3-one	Metabolite of 17,20-beta-Dihydroxy-4-pregnen-3-one	ECOTOX Staff
SMTC	Somatomedin C (or IGF-1)	Somatotropin or human growth hormone is secreted by the pituitary gland under the influence of growth hormone releasing hormone. IGF-I is the main effector of growth hormone activity. IGF-I or Somatomedin C is the major member of a family of proteins synthesized by the liver in response to growth hormone stimulus. It circulates in the peripheral blood bound on a tertiary complex with IGFBP-3 and acid labile subunit (ALS)	http://www.aal.xo-host.com/IGF-1.htm
SRIF	Somatostatin	A polypeptide hormone that is produced by the hypothalamus and inhibits the release of growth hormone by the anterior pituitary. It is also produced in the delta cells of the endocrine pancreas where it inhibits the secretion of insulin and glucagon and decreases intestinal motility and absorption.	www.harcourt.com/dictionary
SRTN	Serotonin	A vasoconstrictor, serves as a central neurotransmitter, also called 5-Hydroxytryptamine.	
ST5T	Total (Delta)5-sterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
ST8T	Total (Delta)8-sterols	Sterol - steroids with long aliphatic side chains at position 17 and at least one alcoholic hydroxyl group, usually at position 3 with lipid-like solubility.	
STRD	Steroids	A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins and some of the carcinogenic hydrocarbons.	http://cancerweb.ncl.ac.uk/omd/
STST	Sulfated Testosterone	A metabolite of Testosterone	

HRM HORMONE EFFECT			
T3T4	Triiodothyronine (T3) to thyroxine (T4)	The ratio of Triiodothyronine (T3) to Thyroxine (T4).	
T4T3	Thyroxine:Triiodothyronine	The ratio of Thyroxine (T4) and Triiodothyronine (T3).	
TGLD	Testosterone glucuronide	A metabolite of testosterone. Testosterone glucuronide comes from the hepatic transformation of testosterone, DHT and androstenedione.	http://www.estetik.com/datamed/Anti_Aging/male_hormones.htm
THYR	Thyroxine	(T4) an iodine-containing hormone C ₁₅ H ₁₁ I ₄ NO ₄ that is an amino acid produced by the thyroid gland as a product of the cleavage of thyroglobulin, increases metabolic rate.	
TRII	Triiodothyronine	(T3) an iodine-containing hormone C ₁₅ H ₁₂ I ₃ NO ₄ that is an amino acid derived from thyroxine, the more active form of thyroid hormone which crosses cell membranes to exert an effect on metabolic rates within an organism.	
TSHT	Thyrotropin	Thyrotropin or thyroid-stimulating hormone (TSH), is a hormone released by the anterior pituitary gland that stimulates the thyroid gland to release thyroxine.	
TSTR	Testosterone	A steroid hormone which is necessary for male sexual reproduction and may also play a role in female sexual response. It is responsible for such male secondary sexual characteristics as body hair. In males, is produced in the Leydig cells of the testes; in both sexes, it is produced in smaller quantities by the adrenal glands.	

GRO GROWTH¹ GROUP

DVP DEVELOPMENT EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
68CL	6-8 Cell stage	Cleavage stage during embryonic development which contains 6-8 cells.	

DVP DEVELOPMENT EFFECT			
ABNM	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	ECOTOX makes every effort to code the specific abnormalities (e.g. imposex, limb deformities, lesions, etc.), but when an author does not clearly state the specific type of abnormality or combines multiple types of abnormalities into one data point DVP ABNM is used.
BSCY	Blastocyst stage	An early metazoan embryo typically having the form of a hollow fluid-filled rounded cavity bounded by a single layer of cells	
CCLV	Cell Cleavage	No definition available.	
COAT	Coat development	Development of primary coat.	ECOTOX
COLR	Color	No definition available.	
DFRM	Deformation/ Malformations	A physical blemish or distortion	
DVLP	Slowed, Retarded, Delayed or Non- development	No definition available.	
EARP	Ear pinna detachment	The detachment of the ear pinna	
EMRG	Emergence	Change in the emergence from larval stage into the adult stage. Also includes plant emergence.	
ENDD	Endoderm Differentiation	No definition available.	
EVFO	Envelope Formation	No definition available.	
EYOP	Eye opening	The development stage when the eyes open.	
FIRM	Firmness	No definition available.	

DVP DEVELOPMENT EFFECT			
FLDG	Fledged/Female or /Brood	No definition available.	
FORM	Organ/Tissue Formation	No definition available.	
FURR	Fur Development	Development of fur.	
GDVP	Development, General	Change in ability to grow to a more mature life stage and in time between separate life stages.	Used when more than one measurement is coded for an ACQUIRE record.
GRRT	Growth Rate	No definition available.	
GSTL	Gastrulation	During embryonic development of most animals a complex and co-ordinated series of cellular movements occurs at the end of cleavage. The details of these movements, gastrulation, vary from species to species, but usually result in the formation of the three primary germ layers, ectoderm, mesoderm and endoderm.	http://cancerweb.ncl.ac.uk/omd/
INCT	Incubation time	To maintain (as an embryo or a chemically active system) under conditions favorable for hatching, development, or reaction.	Webster's
LRCF	Loricae formation	Tintinnid ciliates form stiff, vase-shaped or barrel-shaped coverings called loricae, around themselves.	
MATR	Maturation	The process of coming to full development.	
MMPH	Metamorphosis	A marked structural change in an animal during postembryonic development.	
MOLT	Molting	To shed an outer covering as part of periodic process of growth.	
MRLA	Morula stage	A globular solid mass of blastomeres formed by cleavage of a zygote that typically precedes the blastula.	
NORM	Normal	No definition available.	
PHRN	Post Harvest Character No Effect	No definition available.	

DVP DEVELOPMENT EFFECT			
PHRV	Post Harvest Character Influenced	No definition available.	
PUPA	Pupation	Change in percent pupation or pupation duration.	
RSPN	Resorption (Tail Resorption in Frogs)	No definition available.	
STGE	Stage of development	A period or step in a progress, activity, or development; especially : one of the distinguishable periods of growth and development of a plant or animal.	http://www.m-w.com
SXDP	Sexual Development	No definition available.	
TEMR	Time to First Emergence	No definition available.	
TERA	Teratogenesis	The origin or mode of production of a malformed foetus; the disturbed growth processes involved in the production of a malformed neonate.	Use this code when exposure of adults results in quantifiable occurrence of abnormal offspring.
TFLW	Time to Flower	No definition available.	
THED	Time to heading	The time it take for grain to reach maturity.	
TRRA	Transformation Ratio	(Weight of Roots + Sprouts/weight of Original Seed)	
WEAN	Weaned	Permanent deprivation of breast milk and commencement of nourishment with other food.	http://cancerweb.ncl.ac.uk/omd/
WGHT	Weight	The heaviness of an object.	
YLKA	Yolk sac absorption, Yolk sac utilization	A bag-like ventral extension of the gut containing nutritive materials that first appears in the fish embryo and is later absorbed by the larva during the stage after hatching and before feeding.	filaman.uni-kiel.de/LarvalBase/Glossary

GRO GROWTH EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes

GRO GROWTH EFFECT			
<ABNM>	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	DO not code GRO ABNM. ABNM should be coded under MPH (when adult body structures are changing) or DVP (when embryo or juveniles are becoming abnormal throughout different lifestages)
AREA	Area	Change in area of an entire organism.	(Use AREA MPH (Morphology) when measuring specific response sites.
BMAS	Biomass	Includes harvest yield, fruit or seed yield, mass of population, standing crop, productivity.	
<BDBN>	Body Burden	No definition available.	This will need maintenance. If the measurement occurs with and endpoint than the measurement should change to EBCN.
COND	Condition Index	Fitness factor.	
DNSY	Density	No definition available.	
DMTR	Diameter	No definition available.	
DIST	Distance grown	No definition available.	
DWGT	Dry Weight (AQUIRE Only)	Measurable change in dry weight of test organism.	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GAIN	Weight gain	Increase in body weight over existing weight.	http://cancerweb.ncl.ac.uk/omd/

GRO GROWTH EFFECT			
GGRO	Growth, General	Used when more than one measurement is coded for an AQUIRE record.	
<GGRT>	Growth Rate Index	No definition available.	
GREI	Growth Efficiency Index	No definition available.	
HGHT	Height	Measurable change in height of test organism.	
LGTH	Length	Measurable change in length of test organism.	
LINT	Lint	A fibrous coat of thick convoluted hairs borne by cotton seeds that yields the cotton staple.	http://www.m-w.com/
NGAN	Net gain	Net weight gain (total weight gain - placental and fetal weight)	
NLEF	Number of leaves	Number of leaves found on a plant.	
NNOD	Dry Mass/Plant Roots Not Nodulated	No definition available.	
NODE	# Nodules/nodulated Plant Roots	No definition available.	
PMTR	Perimeter	No definition available.	
RADI	Radius	A line segment extending from the center of a circle or sphere to the circumference or bounding surface.	
RGNR	Limb/ Body Part Regeneration	Change in ability to regenerate a body part, byssus production.	
RLGR	Relative Growth Rate	The size increase per unit interval of time.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions.	
SPGR	Specific Growth Rate	Individual growth measurement calculated by using the net weight divided by time, also relative growth rate.	
STNT	Stunting	To hinder from growing to the natural size; to prevent the growth of; to stint, to dwarf; as, to stunt a child; to stunt a plant.	http://cancerweb.ncl.ac.uk/omd/

GRO GROWTH EFFECT			
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite	
THRV	Time to harvest	No definition available.	
WDTH	Width	Measurable change in width of test organism.	
WGHT	Weight	Measurable change in weight of test organism.	
WWGT	Wet Weight (AQUIRE Only)	Measurable change in the wet weight of an organism.	
VGOR	Vigor	Usually a combination of growth and injury effects.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity	

MPH MORPHOLOGY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABDS	Apex to Base Distance	No definitions available.	
ABNM	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	Use this effect-measurement combination when adult body structures are becoming abnormal.
ABST	Absence, absent	Not present.	
AREA	Area	Area of an organ or response site.	
BVSL	Blood vessels	Any of the tubular vessels conveying the blood (arteries, arterioles, capillaries, venules, and veins).	http://cancerweb.ncl.ac.uk/omd/
CAWT	Calcium weight	The ratio of calcium in the bone to the weight of the bone. A measure of bone density.	
COSC	Caudal Ossification Center	No definition available.	
CRCM	Circumference	The external boundary or surface of a figure or object.	http://www.m-w.com/

MPH MORPHOLOGY EFFECT			
CTTK	Ratio of cortical thickness to diameter	The ratio of cortical thickness to the diameter.	
DEPO	Shell Deposition	Change in the ability to grow a shell.	
DMTR	Diameter	The diameter of an organ or tissue	
FSSR	Fissure	Any cleft or groove, normal or otherwise, especially a deep fold in the cerebral cortex which involves the entire thickness of the brain wall.	http://cancerweb.ncl.ac.uk/omd/
GMPH	General Morphological Changes	Used when more than one measurement is coded for an AQUIRE record.	
HGHT	Height	Measurable change in height of test organism.	(existing SOP definition)
IMPS	Imposex, Intersex Conditions	No definition available.	
IPOS	Inter-parietal Ossification	The formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance between the parietal bones or cartilages.	http://cancerweb.ncl.ac.uk/omd/
LFLV	Lens focal length variability	Measure of the sharpness of focus	ECOREF#57008
LGTH	Length	Measurable change in length of a response site.	ECOTOX staff
MOSC	Metacarpal Ossification Center	No definition available.	
MSSG	Missing, absent	A tissue/organ not developed or missing from a body.	
NLRG	Enlargement	To increase in size.	
NORM	Normal	Conforming to a type, standard, or regular pattern.	http://www.m-w.com/
OSSC	Ossification center	An area where the formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance occurs.	http://cancerweb.ncl.ac.uk/omd/
PULP	Pulp	The soft succulent portion of a fruit.	McGraw-Hill, 1994

MPH MORPHOLOGY EFFECT			
POSC	Parietal Ossification	The formation of bone or of a bony substance, the conversion of fibrous tissue or of cartilage into bone or a bony substance located near the parietal bone	http://cancerweb.ncl.ac.uk/omd/
RADI	Radius	A line segment extending from the center of a circle or sphere to the circumference or bounding surface.	from SOP
RATO	Ratio	Ratio of the size of body parts.	
RIBS	Number of ribs	Amount of rib bones present.	
SFRB	Supernumerary full rib	A full rib that exceed the expected number of ribs.	
SHPE	Change in Shape	No definition available.	
SIZE	Size	The size of an organ or tissue.	
SMIX	Somatic Index	Organ Weight in Relationship to Body Weight.	
SMTE	Somite	Segmentally arranged blocks of mesoderm lying on either side of the notochord and neural tube during development of the vertebrate embryo.	
SOSC	Sternal Ossification Center	No definition available.	
SRIB	Supernumerary Ribs	No definition available.	
SSRB	Short supernumerary rib	A partial rib that exceed the expected number of ribs.	
STBD	Seminiferous tubule diameter	The diameter of any of the coiled threadlike tubules that make up the bulk of the testis and are lined with a layer of epithelial cells from which the spermatozoa are produced.	
STRC	Structural Changes	No definition available.	
STTO	Strength and Tone	No definition available.	
SVTE	Supernumerary vertebrae	Having more than the expected number of vertebrae.	
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite.	
TKWD	Thickness:width	Ratio of thickness to width.	

MPH MORPHOLOGY EFFECT			
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	
WEAR	Wearing	To cause to deteriorate by use. To impair or diminish by use or attrition. To consume or waste gradually.	www.m-w.com
WGHT	Weight	The heaviness of an object.	
WDTH	Width	Wideness; the distance from one side of an object or area to the other.	http://cancerweb.ncl.ac.uk/omd/

CEL CELLULAR GROUP

CEL CELLULAR EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
AGGR	Aggregation/ Adhesion	No definition available.	
AREA	Area of the cell or cell mass	Area of the cell or cell mass.	
ARGY	Argyrophilic cells	An enteroendocrine cell.	
BASO	Basophil	A structure, cell or other histologic element staining readily with basic dyes; a granular leukocyte with an irregular shaped, relatively pale-staining nucleus that is partially constricted into 2 lobes; also called basophilic leukocytes; a beta cell of the adenohypophysis - see also gonadotroph and thyrotroph	
BCEL	B-cell	A type of lymphocyte normally involved in the production of antibodies to combat infection. It is a precursor to a plasma cell. During infections, individual B-cell clones multiply and are transformed into plasma cells, which produce large amounts of antibodies against a particular antigen on a foreign microbe. This transformation occurs through interaction with the appropriate CD4 T helper cells.	http://cancerweb.ncl.ac.uk/omd/
BPCL	Bipolar Cell	A class of retinal interneurons, named after their morphology, that receive input from the photoreceptors and send it to the ganglion cells.	http://cancerweb.ncl.ac.uk/omd/

CEL CELLULAR EFFECT			
CCHG	Cell Changes	Cytology, change in organelle structure, cell size or cell volume. Used when more than one measurement is coded for an AQUIRE record.	(do not use GRO), phagocytosis. For algae, use for change in optical density, location of pigments, cell shape, size. Another example of where it might be appropriate to initiate use of a morph code.
CDRT	Cell division rate	Cell division = The process by which living cells multiply; may be mitotic or amitotic.	McGraw-Hill, 1994
CESR	Cytosolic Estrogen Receptor	When the cytosolic estrogen receptor binds hormone, the complex moves into the nucleus where it acts as a transcription factor, binding to estrogen responsive elements (ERE) in the DNA and thereby modulating a myriad of cellular functions.	http://www.invitro.gen.com/downloads/FP4.pdf
CILR	Ciliated Type II Receptors	No definition available.	
CIRC	Choline acetyltransferase (ChAT) immunoreactive cells	Cell exhibiting an immunologic reaction to Choline acetyltransferase which is an enzyme that controls the production of acetylcholine.	partial definition: http://cancerweb.ncl.ac.uk/omd/
CLCE	Chloride Cell	No definition available.	
CRCM	Circumference	The external boundary or surface of a figure or object.	http://www.m-w.com/
CTRV	Cell Turnover	No definition available.	
CYTO	Cytotoxicity	No definition available.	
DEND	Dendrite Receptors	No definition available.	
DIVC	Dividing Cells	No definition available.	
DMTR	Diameter	The diameter of a cell.	
DNSY	Density	No definition available.	

CEL CELLULAR EFFECT			
DPTH	Depth	The perpendicular measurement downward from a surface or the direct linear measurement from front to back.	http://www.m-w.com/
EOSN	Eosinophil	A structure, cell or histologic element readily stained by eosin, especially a granular leukocyte with a nucleus that usually has two lobes connected by chromatin.	
ERTH	Erythoroblasts	Any type of nucleated erythrocyte, also designating an immature cell from which a red corpuscle develops.	
ESRS	Estradiol receptor sites	Cytoplasmic proteins that bind estradiol, migrate to the nucleus, and regulate DNA transcription.	http://cancerweb.ncl.ac.uk/omd/
FOCI	Foci	Foci = The origin or center of a disseminated disease	http://cancerweb.ncl.ac.uk/omd/
GABR	gamma aminobutyric acid receptor	Ligand gated chloride ion channel forming receptor opened by gamma aminobutyric acid. Two distinct types: A and B. Also known as GABA receptor.	http://cancerweb.ncl.ac.uk/omd/
GBLT	Goblet Cells	A unicellular, mucus-secreting intra-epithelial gland that is distended on the free surface. Also known as Chalice cell.	
GLCL	Gland Cells	No definition available.	
GNDT	Gonadotrophs	The cells of the anterior pituitary that regulate reproduction are known as gonadotrophs and make the gonadotrophins- luteinising hormone and follicle-stimulating hormone.	mumus.med.monash.edu.au
GRAN	Granulocyte	Any cell containing granules, especially a leukocyte containing neutrophil, basophil, or eosinophil granules in its cytoplasm.	
HGHT	Height	The height of a cell.	
HMPS	Hematopoiesis	The formation and development of blood cells involving both proliferation and differentiation from stem cells. In adult mammals usually occurs in bone marrow.	http://cancerweb.ncl.ac.uk/omd/
HTCY	Heterocyst frequency	Specialized cell type found at regular intervals along the filaments of certain Cyanobacteria, site of nitrogen fixation.	

CEL CELLULAR EFFECT			
LEUK	Leukocytes	White blood cell	
LMFI	Lamellar fusion index	An index related to the fusion of the lamellae which is an area of the gills where exchange of gasses / waste products takes place.	partial definition http://www.aquatext.com/list-l.htm#Lamellae
LMPH	Lymphocyte	Any of the mononuclear , nonphagocytic leukocytes found in the blood, lymph and lymphoid tissues.	
MONO	Monocyte	A large, agranulated leukocyte with a relatively small, eccentric, oval or kidney-shaped nucleus.	
MUCR	Muscarinic Cholinergic Receptor	No definition available.	
MYCT	Myocyte	A muscle cell	http://cancerweb.ncl.ac.uk/omd/
MYLO	Myelocyte	A motile cell produced by and found in the bone marrow which develops into granular leukocytes.	http://cancerweb.ncl.ac.uk/omd/
NCCM	Normochromatic cells, micronucleated	Being normal in color; referring especially to red blood cells that possess the normal quantity of hemoglobin.	
NCEL	Number/Frequency of Cells	No definition available.	
NESR	Nuclear Estrogen Receptor	Nuclear hormone receptor proteins form a class of ligand activated proteins that, when bound to specific sequences of DNA serve as on-off switches for transcription within the cell nucleus. These switches control the development and differentiation of skin, bone and behavioral centers in the brain, as well as the continual regulation of reproductive tissues.	http://www.ks.uiuc.edu/Research/pro_DNA/ster_horm_rec/
NEUT	Neutrophil	A large granular leukocyte with a highly variable nucleus, consisting of three to five lobes, and cytoplasmic granules which stain with neutral dyes and eosin.	
NLEI	Nuclei	The major organelle of eukaryotic cells, in which the chromosomes are separated from the cytoplasm by the nuclear envelope.	http://cancerweb.ncl.ac.uk/omd/

CEL CELLULAR EFFECT			
NMDR	NMDA Receptor	Glutamate receptor sub type. N methyl D aspartate receptor channels seem to be potentiated by intracellular arachidonic acid. Also known as N-methyl, D-aspartic acid or NMDA receptor.	http://cancerweb.ncl.ac.uk/omd/
NRBC	Nucleated red blood cells	Nucleated red blood cells, (nrbc or normoblasts), represent the stages of a red blood cell before it matures. Cells of this stage are usually seen in newborn infants, and in patients with responses to hemolytic crises, such as in megaloblastic anemia and iron deficiency anemia. The average size of the normoblast is 7-12 µm in diameter. The cytoplasm is pink. The nucleus is pyknotic (a homogeneous blue-black mass with no structure).	http://www.wadsworth.org/chemheme/heme/microscope/nrbc.htm
NROD	Rods	Elongated cells or elements of the sensory layer of the retina, some of which are cylindrical, others somewhat conical.	http://cancerweb.ncl.ac.uk/omd/
OGNL	Organelle	A specialized subcellular structure, such as a mitochondrion, having a special function.	
OSRS	Osmotic Resistance/RBC	No definition available.	
PCCM	Polychromatic cells, micronucleated	A primitive erythrocyte in bone marrow, with basophilic material as well as hemoglobin (acidophilic) in the cytoplasm. Synonym: polychromatophil cell.	
PCRC	Polychromatic cells	A primitive erythrocyte in bone marrow, with basophilic material as well as hemoglobin (acidophilic) in the cytoplasm. Synonym: polychromatophil cell.	
PGRC	Progesterone Receptor	A specific protein bound to progesterone that moves with the hormone into the nucleus and forms a transcription factor.	(http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Progesterone.html)
PKNJ	Purkinje cells	Largest brain neuron involved synaptic processing.	www.omnimag.com/live_science/purkwrlld
PKNS	Pyknosis	Contraction of nuclear contents to a deep staining irregular mass, sign of cell death.	http://cancerweb.ncl.ac.uk/omd/

CEL CELLULAR EFFECT			
PLAS	Plasmolysis	Contraction or shrinking of the protoplasm of a plant cell due to the loss of water by osmotic action.	
PMNC	Polymorphonuclear cells	Having nuclei of varied forms; denoting a variety of leukocyte.	http://cancerweb.ncl.ac.uk/omd/
PRKY	Perikarya, perikaryon	Cell body surrounding nucleus of a neuron does not include axonal and dendritic processes.	http://cancerweb.ncl.ac.uk/omd/
RBCE	Red Blood Cell	Erythrocyte - found in peripheral blood.	
RETI	Reticulocytes	A young red blood cell showing a basophilic reticulum under vital staining.	
RSBC	Receptor site, binding capacity	No definition available.	
SGDN	Signal Density	No definition available.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions of a cell.	
SPLO	Splenocytes	The monocyte characteristic of the spleen.	
SRTL	Sertoli cells	Elongated cells in the tubules of the testis to which the spermatids become attached. They provide support, protection, and, apparently, nutrition until the spermatids become transformed into mature spermatozoa.	http://cancerweb.ncl.ac.uk/omd/
STCL	Stippled cells	Cells that have an appearance of being engraved by means of dots and flicks.	partial definition: http://www.m-w.com/
STRC	Structural Changes	No definition available.	
TCEL	T-cell	A class of lymphocytes, so called because they are derived from the thymus and have been through thymic processing. Involved primarily in controlling cell-mediated immune reactions and in the control of B-cell development. The T-cells coordinate the immune system by secreting lymphokine hormones.	http://cancerweb.ncl.ac.uk/omd/
TCRA	T-cell receptor ab (TCR)	No definition available.	
THRM	Thrombocytes	A blood platelet.	

CEL CELLULAR EFFECT			
TWBC	White Blood Cell Count, Total	Measure of total WBC.	
UBWB	White Blood Cell, Undifferentiated Blasts	Absence of normal differentiation of white blood cell blasts.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	from SOP
WBCI	White blood cell index	white blood cell count multiplied by the percentage of immature white blood cells called marrow blasts	http://patient.cancerconsultants.com/leukemia_cancer_news.aspx?id=17792
WDTH	Width of the cell	Width of the cell.	

GEN GENETIC EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
2KMR	Cyp2K mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp2K.	
ACMR	beta-Actin mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Beta-Actin is a muscle protein that is the chief constituent of the Z-band myofilaments of each sarcomere.	
ACRD	Abnormal chromosomal distribution	Abnormal chromosomal distribution	
ALFR	Allele frequency	the frequency of any one of a series of two or more different genes that occupy the same position (locus) on a chromosome.	http://cancerweb.ncl.ac.uk/omd/

GEN GENETIC EFFECT			
AMRN	Cytochrome P450aromB mRNA	Cytochrome P450 aromatase messenger RNA. Part of an enzyme which converts androgens to oestrogens by desaturating ring a of the steroid. mRNA (messenger RNA) is the mediating template between DNA and proteins. P450arom is a major player in estrogen signaling. Also known as Cytochrome P450 aromatase mRNA and Estrogen sythetase mRNA	
APOP	Apoptosis, Programmed Cell Death, DNA Fragmentation	Programmed cell death as signalled by the nuclei in normally functioning human and animal cells when age or state of cell health and condition dictates	http://cancerweb.ncl.ac.uk/omd/
BADF	beta-Actin cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein beta-actin.	http://cancerweb.ncl.ac.uk/omd/
BNFM	Brain-derived neurotrophic factor mRNA	Small basic protein purified from pig brain, a member of the family of neurotrophic factors that also includes Nerve Growth Factor and neurotrophin 3. In contrast to nerve growth factor, brain-derived neurotrophic factor is predominantantly (though not exclusively) localised in the CNS. It supports the survival of primary sensory neurons originating from the neural crest and ectodermal placodes that are not responsive to NGF. In the brain brain-derived neurotrophic factor has a trophic action on retinal, cholinergic, and dopaminergic neurons, and in the peripheral nervous system it acts on both motor and sensory neurons. Messenger RNA	http://cancerweb.ncl.ac.uk/omd/
BRAK	Chromosomal breaks	Chromosome breakage - A type of chromosomal aberration which may result from spontaneous or induced breakage. Alkylating agents, various types of irradiation, and chemical mutagens have been found to cause induced chromosomal breakage. Breakage can induce base pair translocations, deletions, or chromatid breakage.	
CA1M	CYP1A1 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A1.	

GEN GENETIC EFFECT			
CA2M	Cytochrome P-450 1A2 mRNA	A polycyclic aromatic hydrocarbon-inducible cytochrome which is of significant clinical interest due to the large number of drug interactions associated with induction and inhibition of theophylline. Caffeine is considered to be a model substrate for this enzyme. It also metabolises theophylline and antipyrine. Environmental factors including cigarette smoking, charbroiled meat, cruciferous vegetables, and a number of drugs including phenytoin, phenobarbital, and omeprazole produce increases in cyp1a2 activity. Messenger RNA.	http://cancerweb.ncl.ac.uk/omd/
CA3M	CYP1A3 mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A3.	
CABR	Chromosomal aberrations	Modification of the normal chromosome complement due to deletion, duplication, or rearrangement of genetic material.	
CFSM	c-fos mRNA	Retrovirus-associated DNA sequences (fos) originally isolated from the Finkel-Biskis-Jenkins (FBJ-MSV) and Finkel-Biskis-Reilly (FBR-MSV) murine sarcoma viruses. The proto-oncogene protein c-fos codes for a nuclear protein which is involved in growth-related transcriptional control. The insertion of c-fos into FBJ-MSV or FBR-MSV induces osteogenic sarcomas in mice. The human c-fos gene is located at 14q21-31 on the long arm of chromosome 14.	http://cancerweb.ncl.ac.uk/omd/
CGAP	Chromosomal gap	A localized area of thinning in a chromatid which may simulate a complete break.	http://cancerweb.ncl.ac.uk/omd/
CHDF	Choriogenin H cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein Choriogenin H.	http://cancerweb.ncl.ac.uk/omd/
CHLM	Chlorophyll Mutation/Albino Mutants	Mutation: a change in form, quality or some other characteristic; in genetics - a permanent transmissible change in the genetic material.	

GEN GENETIC EFFECT			
CHMR	Choriogenin H mRNA	Choriogenin H is the high molecular weight liver derived precursor protein (ZI-1,2) of the inner layer subunits of the egg envelope. mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Choriogenin H.	ECOREF 64021
CLDF	Choriogenin L cDNA fragments	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein Choriogenin L.	http://cancerweb.ncl.ac.uk/omd/
CLMR	Choriogenin L mRNA	Choriogenin L is the low molecular weight liver derived precursor protein (ZI-3) of the inner layer subunits of the egg envelope. mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Choriogenin L.	ECOREF 64021
CPRN	Cytochrome P1A Messenger RNA (Cyp1A mRNA)	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Cyp1A.	
DAMG	Damage	No definition available.	
DNAB	DNA binding	DNA binding to chemical.	
DNAC	DNA Concentration	No definition available.	
DNAD	DNA Adducts	Adducts are damaged cellular machinery when compounds bind irreversibly with DNA, proteins or other cellular components.	www.vetmed.ucdavis.edu
DNAS	DNA Synthesis Rate	The linking together of nucleotides (as deoxyribonucleotide triphosphates) to form DNA. In vivo, most synthesis is DNA replication, but incorporation of precursors also occurs in repair. In the special case of retroviruses, DNA synthesis is directed by an RNA template (see reverse transcriptase). H3 thymidine incorporation - Thymidine, an essential DNA building block can be radioactively labeled with H3 (tritium) and used to measure DNA synthesis as a reflection of cell division.	
DNPR	DNA to protein ratio	A ratio of DNA to protein.	

GEN GENETIC EFFECT			
DNRN	Ratio of DNA to RNA	The ratio between DNA and RNA concentrations in a sample.	
DPLT	Diplotene	A stage of meiotic prophase which follows the pachytene and during which the paired homologous chromosomes begin to separate and chiasmata become visible.	Webster's
EMRN	Estrogen mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Estrogen - Any of various natural or synthetic substances possessing the biological activity of estrus-producing hormones.	
EMRR	Estrogen receptor : Estrogen mRNA ratio	The ratio of estrogen receptor to estrogen receptor messenger RNA.	
ESRG	Estrogen receptor gene	The estrogen-activated receptor binds to its responsive element in the 5' flanking region of estrogen-responsive genes and modulates the transcription of these genes through its interactions with others transcription factors and the components if the transcription initiation complex.	ECOREF 60619
FSMR	Follicle stimulating hormone beta mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to follicle stimulating hormone.	
G1PN	G1 Phase Nuclei	No definition available.	
GEXP	Gene Expression	No definition available.	
GGEN	Genetics, General	Changes in the genetic processes of cell (e.g. RNA, DNA).	
GHMR	Growth hormone mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Growth hormone is a polypeptide hormone secreted by the anterior pituitary which promotes an increase in body size. Any hormone that regulates growth in plants and animals.	
GLT1	Glucose transporter 1 mRNA	Glucose transporter 1 mediates glucose transport into red cells, and throughout the blood brain barrier. It is ubiquitously expressed and transport glucose in most cells. Messenger RNA.	http://www.4adi.com/flr/glutsflr.html

GEN GENETIC EFFECT			
GLT3	Glucose transporter 3 mRNA	Glucose transporter 3 is the main transporter in neurons. Messenger RNA.	http://www.4adi.com/flr/glutsflr.html
GTPF	Genotype Frequencies	No definition available.	
HTZY	Heterozygosity	The presence of different alleles at one or more loci on homologous chromosomes.	
LEPT	Leptotene	A stage of meiotic prophase immediately preceding synapsis in which the chromosomes appear as fine discrete threads.	
LHMR	Lutenizing hormone mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins, in this case specific to Lutenizing hormone.	
LPDN	Lipid to DNA ratio	The amount of lipid as compared to the amount of DNA in a sample.	
M1MR	Metallothionein-I mRNA	A metallothionein isoform messenger RNA.	ECOTOX
M2MR	Metallothionein-II mRNA	A metallothionein isoform messenger RNA.	ECOTOX
ME1A	Meiotic Abnormalities, 1 st Anaphase	No definition available.	
ME1M	Meiotic Abnormalities, 1 st Metaphase	No definition available.	
MEIX	Meiotic Index	The number of round spermatids for each pachytene primary spermatocytes	http://www.biolreprod.org/cgi/content/short/biolreprod.102.010652v1
ME2A	Meiotic Abnormalities, 2 nd Anaphase	No definition available.	
ME2M	Meiotic Abnormalities, 2 nd Metaphase	No definition available.	

GEN GENETIC EFFECT			
MEDM	Meiotic Abnormalities, Diakinesis and 1 st Metaphase	No definition available.	
MEIA	Meiotic Abnormalities, General	No definition available.	
MEIR	Meiosis Rate	No definition available.	
MIAT	Mitotic Abnormalities, Anatelophase	No definition available.	
MIBC	Mitotic Abnormalities, Binucleate Cell	No definition available.	
MIBG	Mitotic Abnormalities, Bridge	No definition available.	
MICL	Mitotic Abnormalities, Clumping	No definition available.	
MICY	Mitotic Abnormalities, Cytomixis	No definition available.	
MIES	Mitotic Abnormalities, Early Separation	No definition available.	
MIEX	Mitotic Abnormalities, Exclusion	No definition available.	
MIFR	Mitotic Abnormalities, Fragment	No definition available.	
MIIN	Mitotic Abnormalities, Interphase Cells	No definition available.	
MILG	Mitotic Abnormalities, Laggard	No definition available.	

GEN GENETIC EFFECT			
MIMN	Mitotic Abnormalities, Micronuclei	No definition available.	
MIMT	Mitotic Abnormalities, Metaphase	No definition available.	
MINB	Mitotic Abnormalities, Nuclear Budding	No definition available.	
MINF	Mitotic Abnormalities, Nuclear Fusion	No definition available.	
MIPO	Mitotic Abnormalities, Disturbed Polarity	No definition available.	
MIPR	Mitotic Abnormalities, Prophase	No definition available.	
MISK	Mitotic Abnormalities, Stickiness	No definition available.	
MITA	Mitotic Abnormalities, General	No definition available.	
MITI	Mitotic Index (#Mitoses/Total Cells)	No definition available.	
MITR	Mitotic Rate	The proportion of cells in a tissue that are undergoing mitosis, expressed as a mitotic index or, roughly, as the number of cells in mitosis in each microscopic high-power field in tissue sections.	http://cancerweb.ncl.ac.uk/omd/
MRMT	Metallothionein mRNA metallothionein ratio	The ratio of metallothionein messenger RNA to metallothionein.	
MRNA	Messenger RNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	

GEN GENETIC EFFECT			
MMRN	Metallothionein mRNA	No definition available.	
MNUC	Micronuclei Increase	No definition available.	
MTOS	Mitosis	A method of indirect division of a cell, consisting of a complex of various processes, by means of which the two daughter nuclei normally receive identical complements of the number of chromosomes characteristic of the somatic cells of the species. Mitosis, the process by which the body grows and replaces cells, is divided into four phases.	http://cancerweb.ncl.ac.uk
MUTA	Mutation	Mutation: a change in form, quality or some other characteristic; in genetics - a permanent transmissible change in the genetic material.	
NABN	Nuclear Abnormalities	No definition available.	
NCPF	Nuclear phase frequency	Number of phases that a cell goes through during cell division.	
PACH	Pachytene	The stage of meiotic prophase that immediately follows the zygotene and that is characterized by paired chromosomes thickened and visibly divided into chromatids and by the occurrence of crossing-over.	
PCNA	PCNA Index	Proliferating cell nuclear a. (PCNA) a 36-kd nuclear acidic protein whose levels in the body correlate with the rates of DNA synthesis and cellular proliferation in transformed cells of certain tumors. Called also cyclin.	http://www.mercksource.com/pp/us/
PHFQ	Phenotype frequencies	The frequency at which a phenotype is displayed. A phenotype is the total characteristics displayed by an organism under a particular set of environmental factors, regardless of the actual genotype of the organism. Results from interaction between the genotype and the environment.	http://cancerweb.ncl.ac.uk/omd/
PLMR	Prolactin mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins. Prolactin is a protein hormone produced by the adenohypophysis; stimulates lactation and promotes functional activity of the corpus luteum.	

GEN GENETIC EFFECT			
POLY	Chromosomal Polyploidy	Polyploidy: the state of having more than two full sets of homologous chromosomes.	
PRDN	Protein to DNA ratio	The amount of protein as compared to the amount of DNA in a sample.	
PSMR	Pituitary specific transcription factor mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	
RASO	Ras Oncogene mutation	A gene that causes cancer in an animal. The gene specifies the structure of an enzyme that catalyzes events that can induce cancerous growth. Ras is a protein found in chromosomes and when mutated it is permanently switched on telling the cell to grow regardless of whether the receptors on the cell surface are activated or not.	McGraw-Hill, 1994
RNAC	RNA Concentration	No definition available.	
RNAS	RNA Synthesis Rate	No definition available.	
RNDN	RNA to DNA Ratio	No definition available.	
RNPR	RNA to protein ratio	A ratio of RNA to protein.	
SEXE	Sex Expression Change	No definition available.	
TSLE	Translocation Efficiency	No definition available.	
U1MR	UGT1a1 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin.	http://www.genes-4u.comgenesg4_024.htm
U6MR	UGT1a6 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin - wild type mutation at position 6.	http://www.genes-4u.comgenesg4_024.htm
U7MR	UGT1a7 mRNA	UGT1A1 is the only isoform that preferentially binds the substrate bilirubin - wild type mutation at position 7.	http://www.genes-4u.comgenesg4_024.htm
UDMR	UDP-glucuronosyltransferase Messenger RNA	UDP-glucuronosyltransferase Messenger RNA. Also known as UGT1 mRNA.	ECOTOX

GEN GENETIC EFFECT			
VDNA	Vitellogenin cDNA	cDNA is DNA that is synthesized from a messenger RNA template, the single-stranded form is often used as a probe in physical mapping to locate the gene or can be cloned in the double stranded form. In this case specific to the protein vitellogenin.	http://cancerweb.ncl.ac.uk/omd/
VMRN	Vitellogenin Messenger RNA	No definition available.	
WTDN	Weight to DNA ratio	The weight of a sample as compared to the amount of DNA in a sample.	
ZRMR	Zona radiata mRNA	mRNA (messenger RNA) is the mediating template between DNA and proteins.	
ZYGO	Zygotene	The stage of meiotic prophase which immediately follows the leptotene and during which synapsis of homologous chromosomes occurs.	

HIS HISTOLOGY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ACAP	Arterial Cuff Atrophy	Arterial - pertaining to an artery or to the arteries. Cuff - A small bandlike structure encircling a part. Atrophy - a wasting away; a diminution in the size of a cell, tissue, or organ.	Dorland's Medical Dictionary
ALYS	Autolysis	Self-digestion by body cells following somatic or organ death or ischemic injury.	
ANSK	Anisokaryosis	Inequality in the size of the nuclei of cells.	Dorland's Medical Dictionary
ARTS	Arteriosclerosis	A degenerative arterial disease marked by hardening and thickening of the vessel walls.	
ASCT	Ascites	Accumulation of serous fluid in the spaces between tissues and organs in the cavity of the abdomen.	Webster's.

HIS HISTOLOGY EFFECT			
ASLT	Alpha Islets	Alpha cell, pancreatic: A type of cell in the pancreas, within the pancreas, the alpha cells are located in areas called the islets of Langerhans. Alpha cells make and release glucagon which raises the level of glucose (sugar) in the blood.	
ATRS	Atresia	Imperforation or closure of a natural orifice or passage of the body.	
ATPH	Atrophy	Diminution in the size of a cell, tissue, or organ that was once fully developed of normal size.	
BODS	Bodies	A mass of matter distinct from other masses.	Webster's
BSLT	Beta Islets	Beta cell, pancreatic: A type of cell in the pancreas. Within the pancreas, the beta cells are located in areas called the islets of Langerhans. They constitute the predominant type of cell in the islets. The beta cells are important because they make insulin. Degeneration of the beta cells is the main cause of type I (insulin-dependent) diabetes mellitus.	
CLFL	Collapsed Follicles	Follicle - A sac or pouch-like depression or cavity.	Dorland's Medical Dictionary
CLLD	Colloids	Microscopic particles between one nanometer and one micrometer in size and can be macromolecules.	http://cancerweb.ncl.ac.uk/omd/
CLPG	Clumping Pigment Granules	No definition available.	
CNGT	Congestion	Excessive or abnormal accumulation of blood in a part.	http://cancerweb.ncl.ac.uk/omd/
CRYT	Crystals	Formations of small irregular solid material often composed of calcium, uric acid and phosphate.	http://cancerweb.ncl.ac.uk/omd/
CSTD	Cestodiasis	Tapeworm infestation, infestation with cestodes, a group of flattened and tape-like hermaphroditic worms that are intestinal parasites in humans and other animals, producing larvae that may invade body tissues.	
CSTS	Cyst	Any closed cavity or sac that is lined by epithelium often contains liquid or semi-solid material.	http://cancerweb.ncl.ac.uk/omd/

HIS HISTOLOGY EFFECT			
CTHN	Colloid thinning	Thinning of the colloid layer	
CTRT	Cataracts	A clouding of the lens of the eye or of its surrounding transparent membrane that obstructs the passage of light.	http://www.m-w.com/cgi-bin/dictionary
CTYP	Percent Cell Type	No definition available.	
CYIN	Cytoplasmic Inclusions	A foreign substance, either liquid or solid, usually of minute size, inclosed in the mass of a the cytoplasm.	http://cancerweb.ncl.ac.uk/omd/
CYTM	Cytomegaly	Enlargement of both the cytoplasm and nucleus while maintaining a normal N/C ratio.	www.csi-net.net/suzanne/page22.htm
CYTP	Cytoplasm	The organized complex of inorganic and organic substances external to the nuclear membrane of a cell and including the cytosol and membrane-bound organelles (as mitochondria or chloroplasts).	Webster's
CYVC	Cytoplasmic Vacuoles	Spaces or cavities within the cytoplasm.	
DBRS	Debris	An accumulation of fragments.	Webster's
DEGN	Degeneration	Deterioration of cellular integrity with no sign of response to injury or disease.	
DISO	Cellular Disorganization	No definition available.	
DLAT	Dilation	The process of enlargement or expansion.	http://cancerweb.ncl.ac.uk/omd/
EDMA	Edema	An excessive accumulation of fluid in the cells, tissue spaces, or body cavities due to a disturbance in the fluid exchange mechanism.	
EHYP	Erythroid Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in the erythroid.	http://cancerweb.ncl.ac.uk/omd/
ENCP	Encephalopathy	Any degenerative disease of the brain.	http://cancerweb.ncl.ac.uk/omd/
ENDR	Endarteritis	Inflammation of the inner lining of an artery.	

HIS HISTOLOGY EFFECT			
ESPH	Esophagitis	Inflammation of the esophagus.	
EXCS	Extracellular space	Interstitial space between cells, occupied by fluid as well as amorphous and fibrous substances.	http://cancerweb.ncl.ac.uk/omd/
EXPT	Exophthalmia	Abnormal protrusion of the eye from the orbit.	http://cancerweb.ncl.ac.uk/omd/
FBRs	Fibrosis	A condition marked by increase of interstitial fibrous tissue.	http://www.m-w.com/
FUSE	Fuse, fused	To become blended or joined by or as if by melting together.	Webster's
GHIS	Histological Changes, General	Presence of physical damage or change to tissues or cells (for example, lesions, neoplasms); gross histological effects such as whole plant injury; disintegration of roots, stems or leaves; root fragmentation. For animals such effects include cell sloughing.	The specifics of the histology effect will be reported in EE_Remarks for ACQUIRE or the Result Remarks for TERRETOX. Used when more than one measurement is coded for an ECOTOX record.
GLSN	Gross Lesions	Any pathological or traumatic discontinuity of tissue or loss of function of a part.	http://cancerweb.ncl.ac.uk/omd/
HDPC	Hydropericardium	A noninflammatory accumulation of fluid in the pericardial sac.	http://cancerweb.ncl.ac.uk/omd/
HEMR	Hemorrhage	Change or presence of hemorrhaging.	
HFLX	Hyperflexion	Flexion of a limb or part beyond the normal limit. Synonym: superflexion.	
HRNA	Hernia	The protrusion of a loop or knuckle of an organ or tissue through an abnormal opening.	http://cancerweb.ncl.ac.uk/omd/
HYCE	Hypocellularity	No definition available.	
HYCR	Hyperchromicity	An increase in the optical density of a solution with nucleic acids in it such that it is able to absorb more ultraviolet radiation, which occurs when the double-stranded nucleic acid molecules denature into single-stranded molecules	http://cancerweb.ncl.ac.uk/omd/

HIS HISTOLOGY EFFECT			
HYDS	Hydropic Swelling	No definition available.	
HYPL	Hyperplasia	Increase in cell number causing an increase in the size of a tissue or organ.	
HYPT	Hypertrophy	Increase in cell size causing an increase in the size of an organ or tissue.	
IHGT	Increased Height	Increase in height of an object such a cells or cellular components.	
IMVL	Increased Medullary Volume	Medullary - pertaining to the marrow or to any medulla. Medulla - The inmost part. A general term for the most interior portion of an organ or structure. Called also marrow.	Dorland's Medical Dictionary
ININ	Intranuclear inclusions	A foreign substance, either liquid or solid, usually of minute size, inclosed within the nucleus of a cell.	
IPDY	Increased Portal Density	Portal: Of or pertaining to a porta, especially the porta of the liver; as, the portal vein, which enters the liver at the porta, and divides into capillaries after the manner of an artery.	http://cancerweb.ncl.ac.uk/omd/
IPHM	Increased Perivenous Homogeneity	Perivenous - around the vein.	Dorland's Medical Dictionary
LESI	Lesions	A structural or functional alteration due to injury or disease.	
LMLL	Lamellae, Lamella	A thin, plate-like layer, the layer between the walls of two adjacent plant cells.	http://cancerweb.ncl.ac.uk/omd/
LPHD	Lymphoid depletion	Loss of structure found within the lymphatic system that consists of lymphocytes within a network of fibers.	http://cancerweb.ncl.ac.uk/omd/
MALN	Misalign, misaligned	Not to be in or come into precise adjustment or correct relative position.	Webster's
MAPH	Microphthalmia and anophthalmia	An unnatural smallness of the eyes, occurring as the result of disease or of imperfect development or congenital absence of all tissues of the eyes.	http://cancerweb.ncl.ac.uk/omd/
MELM	Melanomacrophages	No definition available.	
MHYP	Myeloid Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in myeloid.	http://cancerweb.ncl.ac.uk/omd/

HIS HISTOLOGY EFFECT			
MYOP	Myopathy	Disorder of muscle tissue or muscles.	
NCRL	Necrotic Lesions	No definition available.	
NCRO	Necrosis	Death of a cell or group of cells as a result of injury, disease, or other pathologic state.	
NCVS	Nuclear Vesiculation	Vesiculation -the prescence or formation of vesicles. Nuclear - Of or pertaining to a nucleus; as, the nuclear spindle or the nuclear fibrils of a cell; the nuclear part of a comet, etc.	Dorland's Medical Dictionary http://cancerweb.ncl.ac.uk/omd/
NPHG	Nephrogenesis	Development or growth of the kidney.	
NPHR	Nephrosis	Degenerative or retrogressive renal lesions, distinct from inflammation (nephritis) or vascular involvement (nephrosclerosis), especially as applied to tubular lesions.	
PNCH	Parenchyma	The essential elements of an organ, used in anatomical nomenclature as a general term to designate the functional elements of an organ, as distinguished from its framework or stroma. Also known as parenchymal cells.	http://cancerweb.ncl.ac.uk/omd/
PRLF	Proliferation	The reproduction or multiplication of similar forms, especially of cells and morbid cysts.	http://cancerweb.ncl.ac.uk/omd/
PRVN	Proventriculitis	Inflammation of the glandular first portion of the stomach of birds, in which food from the crop (crop, avian) is mixed with peptic enzymes and passed to the gizzard.	
RCVL	Reduced Corticle Volume	Decrease in corticle volume.	
RFSZ	Reduced Follicle Size	Decrease in follicle size.	
RPCD	Reduced Periarteriolar Lymphocyte Sheath Cell Density	As an arteriole leaves a septum and enters the interior volume of the spleen it immediately acquires a continuous coating of lymphocytes. This "sleeve" of lymphocytes is the periarteriolar lymphocyte sheath, or PALS.	http://education.vetmed.vt.edu/Curriculum/VM8054/Labs/Lab13/Lab13.htm

HIS HISTOLOGY EFFECT			
SCNG	Sinus Congestion	Blockage of one or more of the four pairs of sinus passageways in the skull. Blockage may result from inflammation and swelling of the nasal tissues, obstruction by one of the small bones of the nose (deviated septum) or from secretion of mucus	http://www.healthnotes.com/Concern/Sinus_Congestion.cfm
SHMT	Sinus Haematopoiesis	The formation and development of blood cells involving both proliferation and differentiation from stem cells in the sinus.	http://cancerweb.ncl.ac.uk/omd/
SHYP	Sinus Hyperplasia	The abnormal multiplication or increase in the number of normal cells in normal arrangement in the sinus.	http://cancerweb.ncl.ac.uk/omd/
SMLN	Severe misalignment	Not to be in or come into precise adjustment or correct relative position.	Webster's
SMMN	Slight to moderate misalignment	Not to be in or come into precise adjustment or correct relative position.	Webster's
SNAP	Synapses	The point at which a nervous impulse passes from one neuron to another.	Webster's
SOSS	Surpernumerary ossification	Beyond the normal number of ossifications.	
SWEL	Swelling, Swollen	No definition available.	
TFLR	Tissue Damage Measured by Fluorescence under Dyes or in Uv Light	No definition available.	
USTR	Ultrastructural Changes	No definition available.	
VCLZ	Vacuolization	The process of forming vacuoles; the condition of being vacuolated.	
XCPH	Exencephaly	Condition in which the skull is defective with the brain exposed or extruding. Synonym: exencephalia.	http://cancerweb.ncl.ac.uk/omd/

MOR MORTALITY OR SURVIVORSHIP² GROUP
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MOR MORTALITY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
BDAY	Bird days	This is a measure of survivorship. Bird days is equal to the number of birds alive on day X * X days.	ECOREF 36364
DLMT	Dominant lethal mutations	(1-live embryos per test female/live embryos per control female) X 100.	
DTTM	Death with tumors	Mortalities that occurred with tumors.	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GMOR	Mortality/Survival, General	Used when more than one measurement is coded for an AQUIRE record.	(General mortality is a place holder for AQUIRE transfers)
HTCH	Hatch	Change in percent hatch, time to hatch or number of eggs hatched.	
LBCN	Lethal Body Concentration	Also Lethal Body Burden. The body residue of a chemical that is associated with mortality.	<i>Use this effect-measurement pair if the author reports an endpoint based on lethal body burden or lethal body concentration (internal chemical concentrations).</i>
LIFE	Life Expectancy	Longevity, the average length of life of individuals in a population.	http://cancerweb.ncl.ac.uk/omd/
LFSP	Lifespan or longevity	The normal or average duration of life of members of a given species.	http://cancerweb.ncl.ac.uk/omd/
MDTH	Mean Time of Death	No definition available.	

MOR MORTALITY EFFECT			
MORT	Mortality	Effect expressed as % death or % survival. A lethal effect may describe mortality (MOR) or an observed behavior that indicates mortality (e.g., shell valve closures for bivalves (SVC), immobilization (IMM) for invertebrates, or detachment (DET) for sessile organisms). "MOR" differs from "ABD" in that an initial number of organisms is known for the mortality effect and results are expressed in terms of the initial number (e.g., percent survival).	If the author defines criteria used to determine that the organism was dead, and then identifies the effect as a lethal effect, "MOR" will be coded in the EFFECT field. MOR may be coded as an effect with either LC, EC, LD, NOEC, or LOEC endpoints.
PSUR	Probability of Survival	Survival probability, $g(x)$, describes the probability of survival from age x to age $x+1$, given that an individual has already survived to age x . To calculate $g(x)$, divide the survivorship schedule at age $x+1:l(x+1)$ by the survivorship schedule at age x .	
SURV	Survival	No definition available.	
SVVS	Survivorship	Number alive at beginning of an age class from original cohort	
TDTH	Time to Death	No definition available.	
TKNO	Knockdown	No definition available.	
TLET	Time to 100% Mortality	No definition available.	

PHY PHYSIOLOGICAL GROUP			
IMM IMMUNITY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABDT	Antibody Titres	ELISA - No definition available.	

IMM IMMUNITY EFFECT			
ABSC	Abscess	A localized pus-forming (suppurative) bacterial infection.	http://cancerweb.ncl.ac.uk/omd/
ASHG	Anti-sheep Red Blood Cell Hemagglutinin	No definition available.	
CMGR	Cell migration	Implies movement of a population of cells from one place to another as in the movement of neural crest cells during morphogenesis	
DHYP	Delayed Type Hypersensitivity	No definition available.	
GIMM	Immunity, General	Used when more than one measurement is coded for an ACQUIRE record.	
HEAL	Healing	To make sound or whole [heal a wound]	
HMRL	Humoral immunity	Immune responses moderated by antibodies.	http://cancerweb.ncl.ac.uk/omd/
HTPL	Heterophiles	An antibody raised against an antigen from one species that also reacts against antigens from other species.	
IFCT	Infected	Contaminated with a disease-producing substance or agent.	Webster's
IGMG	Immunoglobulin G	The classical immunoglobulin class also called 7S IgG (150 kD). Composed of two identical light and two identical heavy chains, the constant region sequence of the heavy chains being of the type. The molecule can be described in another way as being composed of two Fab and an Fc fragment.	http://cancerweb.ncl.ac.uk/omd/
IGMM	Immunoglobulin M	An immunoglobulin M molecule (970 kD) is built up from five immunoglobulin G type monomers joined together, with the assistance of J chains, to form a cyclic pentamer. Immunoglobulin M binds complement and a single molecule bound to a cell surface can lyse that cell. Immunoglobulin M is usually produced first in an immune response before immunoglobulin G.	http://cancerweb.ncl.ac.uk/omd/
INTS	Intussusception	Intussusception refers to a telescoping of one portion of the intestine into another. This results in reduced blood supply to the affected portion of the intestine.	http://cancerweb.ncl.ac.uk/omd/

IMM IMMUNITY EFFECT			
LKMA	Leukemia	An acute or chronic disease of unknown cause in man and other warm blooded animals that involves the blood forming organs, is characterized by an abnormal increase in the number of leucocytes in the tissues of the body with or without a corresponding	http://cancerweb.ncl.ac.uk/omd/
LYPA	Lymphoma	Malignant tumor of lymphoblasts derived from B lymphocytes.	http://cancerweb.ncl.ac.uk/omd/
LYMP	Lymphocyte Activity	No definition available.	
MCPG	Macrophage activity	Relatively long lived phagocytic cell of mammalian tissues, derived from blood monocyte. Macrophages from different sites have distinctly different properties. In response to foreign materials they may become stimulated or activated. Macrophages play an important role in killing of some bacteria, protozoa and tumor cells. They release substances that stimulate other cells of the immune system and are involved in antigen presentation.	http://cancerweb.ncl.ac.uk/omd/
MPHG	Microphage Function, Activity	No definition available.	
MYEL	Myelosis	A condition characterized by abnormal proliferation of tissue or cellular elements.	http://cancerweb.ncl.ac.uk/omd/
NKCA	Natural Killer Cell Activity	No definition available.	
PARA	Amount or Percent Organisms Infested with Parasites	No definition available.	
PFCR	Plaque forming cell response	Plaque forming cell - An antibody-producing cell detected in vitro by its ability to lyse antigen-sensitized erythrocytes in the presence of complement.	http://www.flesha.ndbones.com/immunology/roitt/glossary.cfm?letter=P
PHAG	Phagocytosis	A specialized form of macropinocytosis in which cells engulf large solid objects such as bacteria and deliver the internalized objects to special digesting vacuoles.	
PNMA	Pneumonia	Inflammation of the lungs with consolidation.	http://cancerweb.ncl.ac.uk/omd/

IMM IMMUNITY EFFECT			
PRNF	Parasitic Infection	No definition available.	
PRTU	Proteuria	The presence of an excess of serum proteins in the urine; called also albuminuria (also known as proteinuria).	Dorland's Medical Dictionary
RSTT	Rosette Response, Rosette Forming Cell Concentration	No definition available.	
THYM	Thymocyte Activity	Lymphocyte within the thymus, term usually applied to an immature lymphocyte.	http://cancerweb.ncl.ac.uk/omd/

INJ INJURY EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABSN	Abrasion	A superficial injury to the skin or other body tissue caused by rubbing or scraping resulting in an area of body surface denuded of skin or mucous membrane.	
ADNM	Adenoma	A benign epithelial tumor in which the cells form recognizable glandular structures or in which the cells are clearly derived from glandular epithelium.	http://cancerweb.ncl.ac.uk/omd/
AMLD	Amyloidosis	Deposition of amyloid. A common complication of several diseases (leprosy, tuberculosis), often associated with perturbation of the immune system, although there may be immunosuppression or enhancement.	http://cancerweb.ncl.ac.uk/omd/
AUTO	Autotomy	Constriction and/or loss of segments. The act of casting off a body part as a means of escape.	ECOREF 47717 http://cancerweb.ncl.ac.uk
BTMR	Benign tumor	A nonmalignant clone of neoplastic cells that does not invade locally or spread to other parts of the body (metastasize), having lost growth control but not positional control. Usually surrounded by a fibrous capsule of compressed tissue.	http://cancerweb.ncl.ac.uk/omd/
CLFT	Cleft palate	A congenital fissure in the roof of the mouth forming a communication between the nasal passages and the oral cavity.	http://cancerweb.ncl.ac.uk/omd/

INJ INJURY EFFECT			
CLRS	Chlorosis	A form of macrocytic anemia in young females characterized by marked reduction in hemoglobin and a greenish skin color. A disease condition of green plants seen as yellowing of green parts of the plant.	
CURV	Curvature	No definition available.	
DAMG	Damage	No definition available.	
DESI	Desiccation	The permanent decrease or disappearance of water.	
GINJ	Injury, General	Used when more than one measurement is coded for an ACQUIRE record.	
IFLM	Inflammation	A localized protective response elicited by injury or destruction of tissues, which serves to destroy, dilute or wall off (sequester) both the injurious agent and the injured tissue.	http://cancerweb.ncl.ac.uk/omd/
MTMR	Malignant tumor	A tumor that tends to become progressively worse and to result in death. Having the properties of anaplasia, invasion and metastasis.	
MUTI	Mutigenesis	The occurrence or induction of mutation.	
PLYP	Polyp	A projecting mass of swollen and hypertrophied or tumorous membrane.	
SYMP	Symptom Severity Index	No definition available.	
THMB	Thrombosis	Aggregations of blood factors, primary platelets and fibrin with entrapment of cellular elements, frequently causing vascular obstruction at the point of its formation.	
TUMR	Tumor Induction	No definition available.	
ULCR	Ulcer	A local defect or excavation, of the surface of an organ or tissue, which is produced by the sloughing of inflammatory necrotic tissue.	
VASC	Vascular Disruption	No definition available.	
WART	Papilloma, wart	Wart, benign tumor of the epithelium.	

ITX INTOXIFICATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ANOR	Anorexia	Loss of appetite.	
ATAX	Ataxia	Lack of muscular coordination due to any of several nervous system diseases.	
CONV	Convulsions	An episode of involuntary, generally violent muscular contractions.	
GITX	Intoxication, General	Used when more than one measurement is coded for an ACQUIRE record.	
IMBL	Immobile	Change in the failure to respond or lack of movement after mechanical stimulation.	
INCO	Incoordination	No definition available.	
MBLT	Mobility	No definition available.	
PARL	Paralysis	Complete or partial loss of motor or sensory function.	
TINT	Time to Signs of Intoxication	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABSC	Abscission	A physiological process promoted by abscisic acid whereby plants shed a part, such as a leaf, flower, seed, or fruit.	
ADTH	Auditory Threshold	The audibility limit of discriminating sound intensity and pitch.	http://fred.hmc.ps.u.edu/ds/retrieve/fred/meshdescriptor/D001309
APCT	Aerobic Protein Catabolism	No definition available.	
ADPE	Adsorption Efficiency	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
ADPO	Oxidative Phosphorylation	Conversion of inorganic phosphate to the energy-rich phosphate of adenosinetriphosphatase by reactions associated with the electron transfer system.	
AECG	Abnormal ECG	Electrocardiogram (ECG / EKG) is an electrical recording of the heart.	
AECH	Adenylate energy charges (AEC)	The Adenylate energy charge (AEC) accounts for the regulation of enzymatic activity by ATP, ADP and/or AMP.	digital.library.okstate.edu/oas/oas_pdf/v74/p31_36.pdf
AEXR	Ammonia Excretion	No definition available.	
AHIN	A-H Intervals	The time from the initial rapid deflection of the atrial wave to the initial rapid deflection of the His bundle (H) potential; it approximates the conduction time through the A-V node (normally 50-120 msec).	http://cancerweb.ncl.ac.uk/omd/
ALAE	Aminolevulinic acid excretion	Aminolevulinic acid excreted by organism	
ANBC	Aniline Binding Capability	No definition available.	
ASML	Assimilation Efficiency	Change in efficiency of trophic transfers between different levels in the food chain, e.g. between primary producers and grazers.	
ATFL	Aortic flow	The amount of blood flowing through the aorta.	
AVCD	AtrioVentricular conduction delay	Delays in conduction below the bifurcation of Bundle of His cause bundle branch or fascicular blocks, while atrioventricular conduction is maintained, unless all three fascicles are simultaneously affected. The causes are both intrinsic and extrinsic. However, since the AV node and bundle of His provide a special connection of the atria to the ventricles, focal injury from heart attacks, infections, catheter trauma, is common.	

PHY PHYSIOLOGICAL EFFECT			
AXSS	Axis shift	Related to the mean electrical axis of an EKG. The mean electrical axis of the QRS complex is the average of the total depolarization of the ventricles in the frontal plane. There is a correlation between the mean electrical axis of the QRS complex and the electrical activity of the heart. Therefore, in pathologic hypertrophy of either ventricle (ie. when there is more muscle being depolarized), the axis tends to shift in the direction of the hypertrophied ventricle.	
BAAT	rBAT induced amino acid transfer	The transport of amino acids via the rBAT induced system involves an electrogenic exchange of neutral and dibasic amino acids. rBAT is a protein that is located in the brush border membranes of intestine and renal proximal tubule cells.	ECOREF 45834
BDVL	Blood Volume	No definition available.	
BLPR	Blood pressure	Pressure that is exerted by the blood upon the walls of the blood vessels and especially arteries and that varies with the muscular efficiency of the heart, the blood volume and viscosity, the age and health of the individual, and the state of the vascular wall.	
BLUM	Bioluminescence	The emission of visible light by living organisms.	
BNDS	Bending strength	A measure of the load an object can bear if its ends are supported and a weight is attached to the middle, i.e. it is how many pounds of lateral force the object takes before it breaks.	
BTFT	Butter fat	The natural fat of milk and chief constituent of butter consisting essentially of a mixture of glycerides (as those derived from butyric, capric, caproic, and caprylic acids).	http://www.m-w.com/
BTMP	Body Temperature\	No definition available.	
C14U	C-14 Uptake	Amount or process of Carbon-14 uptake by a cell.	
CAAS	Calcium assimilation	Amount of calcium assimilated.	
CAEX	Calcium excretion	Calcium excreted by organism.	
CANU	Calcium not excreted	Calcium utilized/Calcium ingested * 100.	

PHY PHYSIOLOGICAL EFFECT			
CARE	Calcium retained	Calcium retained/Calcium ingested * 100.	
CARU	Calcium retention to utilization ratio	Ratio of Calcium retained (Utilized - Transferred to Egg) to Calcium utilized (ingest - excreted).	
CASS	Carbon assimilation	Assimilation of carbon into an organism or tissue.	
CATR	Calcium transfer	Per cent of calcium transferred to the egg, Calcium in egg/Calcium utilized x 100.	
CATU	Calcium transfer to utilization ratio	Per cent of calcium transferred to the egg in relation to calcium utilized.	
CAUP	Calcium Uptake	No definition available.	
CCCL	Coccolith formation	One of the small, interlocking calcite plates covering members of the Coccolithophorida (unicellular, biflagellate, golden brown algae).	
CDIN	Cardiac index	The heart output per unit of time over body surface, usually expressed in terms of liters per minute per square meter.	
CDOP	Cardiac output	A measurement of the blood flow through the heart to the systemic (and pulmonary) circulation. Cardiac output is expressed as volume of blood per unit time or liters/minute.	http://cancerweb.ncl.ac.uk/omd/
CDUP	Cadmium Uptake	No definition available.	
CEBS	Cytosolic estrogen-binding sites	Measure of estrogen binding with sites within cytosol.	
CFIX	Carbon Fixation	No definition available.	
CFLW	Coronary flow	The amount of blood flowing through the coronary artery.	
CLFX	Chloride flux	Rate of movement of Chloride ions across membranes.	
CLNC	Clearance	The rate at which a substance is removed from the blood.	
CLRC	Caloric content	The energy derived from food is described by its caloric content.	
CLUP	Chloride uptake	Amount of chloride taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP

PHY PHYSIOLOGICAL EFFECT			
CMPS	Compression strength	The maximum load an object can withstand before failure (or specified deformation) under standard test conditions.	
CMRB	Cholinergic muscarinic receptor binding	Distinct from the nicotinic cholinergic receptor in having no intrinsic ion channel, the receptor is formed from one protein chain with 7 transmembrane regions. The receptors produce their effect via activation of GTP-binding proteins.	http://cancerweb.ncl.ac.uk/omd/
CNVY	Conductivity	Degree to which a substance transmits (conducts) a given physical property, such as heat or electricity.	http://cancerweb.ncl.ac.uk/omd/
CO2A	Carbon dioxide assimilation	Assimilation of carbon dioxide into an organism or tissue.	
CO2F	CO2 Fixation	A mean in which photosynthetic bacteria obtain carbon for biosynthesis. Most commonly utilizing the Calvin cycle to convert CO2 to organic carbon.	instruct1.cit.cornell.edu/courses/biom290/CO2FIX.html
CO2T	Carbon Dioxide Tension, Partial Pressure of Carbon Dioxide, PCO2	No definition available.	
COCE	Coupling coefficient	The voltage change observed in a neuron when current is injected into another cell to which it is coupled by electrical synapses.	http://www.nature.com/cgi-taf/DynaPage.taf?file=/nrn/journal/v2/n6/abs/nrn0601_425a_r.html
COLD	Cold Hardiness	No definition available.	
COUP	Cobalt uptake	Amount of cobalt taken in by an organism or an organism's tissues.	
CPCT	Capacitance	The property of an electric nonconductor that permits the storage of energy as a result of the separation of charge that occurs when opposite surfaces of the nonconductor are maintained at a difference of potential	Webster's
CRAT	Contraction rate	The rate at which a site contracts (e.g. muscle contraction).	
CREX	Chromium excretion	Chromium excreted in the urine by an organism.	

PHY PHYSIOLOGICAL EFFECT			
CRSP	Cellular respiration	The conversion within the cell of nutrients (such as sugar molecules) into chemical energy in the form of ATP, by reacting the food with oxygen (O ₂) until the food has completely been degraded into carbon dioxide and H ₂ O.	http://cancerweb.ncl.ac.uk/omd/
CRUP	Chromium uptake	Amount of chromium taken in by an organism or an organism's tissues.	
CTIM	Clotting Time	The time required for blood to coagulate; prolonged in haemophilia and in the presence of obstructive jaundice, some anemias and leukemias, and some of the infectious diseases.	http://cancerweb.ncl.ac.uk/omd/
CTSL	Carbon translocation	The transfer of carbon from one part of an organism to another.	
CUUP	Copper Uptake	No definition available.	
CYSU	Cystine uptake	Amount of cystine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
DCRG	Discharge	A flowing or issuing out or something that is emitted.	Webster's
DFIX	Dark Fixation	No definition provided	
DGST	Digestion	Digestion/digestibility. The conversion of food, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	http://cancerweb.ncl.ac.uk/omd/
DORB	Dormancy Break	No definition available.	
DORI	Dormancy Induction	No definition available.	
DRRH	Diarrhea	Abnormally frequent intestinal evacuations with more or less fluid stools.	Webster's
DSPS	Diastolic pressure	The intracardiac pressure during or resulting from the diastolic relaxation of a cardiac chamber; the lowest arterial blood pressure reached during any given ventricular cycle	http://cancerweb.ncl.ac.uk/omd/
DSTR	Diestrus	Period of sexual quiescence separating phases of the estrous cycle in polyestrous animals.	http://cancerweb.ncl.ac.uk/omd/
NRGA	Energy Assimilation	No definition available.	
ECPT	Energy charge potential	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
ECTG	Electrocorticogram	A record of electrical activity derived directly from the cerebral cortex.	http://cancerweb.ncl.ac.uk/omd/
ECYC	Estrous cycle	The correlated phenomena of the endocrine and generative systems of a female mammal from the beginning of one period of estrus to the beginning of the next.	http://www.m-w.com/
EECG	Electroencephalogram	No definition available.	
EEUR	Endogenous Excreted Urea	No definition available.	
EFFC	Efficiency	The ratio of the useful energy delivered by a dynamic system to the energy supplied to it.	http://www.m-w.com/
EMCN	Emaciation	Extremely thin or physically wasted.	http://cancerweb.ncl.ac.uk/omd/
ENST	Encystment	The process of forming or becoming enclosed in a cyst or capsule.	
EOCL	Electro-oculography	Recording of the average amplitude of the resting potential arising between the cornea and the retina in light and dark adaptation as the eyes turn a standard distance to the right and the left. The increase in potential with light adaptation is used to evaluate the condition of the retinal pigment epithelium. Electrodes are placed on the skin adjacent to the eyes measure changes in standing potential between the front and back of the eyeball as the eyes move. A sensitive electrical test for detection of retinal pigment epithelium dysfunction.	http://cancerweb.ncl.ac.uk/omd/
EPYR	Electrophysiological response	Pertaining to electrophysiology, the electrical results produced through physiological agencies, or by change of action in a living organism	http://cancerweb.ncl.ac.uk/omd/

PHY PHYSIOLOGICAL EFFECT			
ERLD	Electroretinography light peak:darl trough ratio implicit time	The ratio of light peaks to dark troughs of the waves of the response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	http://cancerweb.ncl.ac.uk/omd/
ERWA	Electroretinography wave amplitude	The wave amplitude response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	http://cancerweb.ncl.ac.uk/omd/
ERWI	Electroretinography wave implicit time	The wave implicit time response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	http://cancerweb.ncl.ac.uk/omd/
ERWL	Electroretinography wave latent time	The wave latent time response of the test an in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	http://cancerweb.ncl.ac.uk/omd/

PHY PHYSIOLOGICAL EFFECT			
ERWV	Electroretinography wave	A test in which an electrode is placed on the cornea of the eye to measure the electrical response of the rods and cones in the retina. It is useful in the evaluation of hereditary and acquired disorders of the retina. A normal test will show the appropriate pattern responses during moments of increased light intensity. Abnormal results can indicate arteriosclerosis of the retina, retinal detachment, temporal arteritis (with eye involvement) or vitamin A deficiency.	http://cancerweb.ncl.ac.uk/omd/
ESGM	Estrogen metabolism	The metabolism of estrogen to its breakdown products.	
ETRS	Estrus	That portion or phase of the sexual cycle of female animals characterized by willingness to permit coitus; readily detectable behavioral and other signs are exhibited by animals during this period.	http://cancerweb.ncl.ac.uk/omd/
ETSA	Electron Transfer System Activity	No definition available.	
EXCR	Excretion Rate	No definition available.	
EYTH	Erythema	A name applied to redness of the skin produced by congestion of the capillaries, which may result from a variety of causes, the etiology or a specific type of lesion often being indicated by a modifying term.	http://cancerweb.ncl.ac.uk/omd/
FATT	Obese	Heavy, overweight.	
FDCV	Food Conversion Efficiency	No definition available.	
FEPP	Fecal production	No definition available.	
FEUP	Iron Uptake	No definition available.	
FLUX	Rate of Movement of Ions Across Membranes	No definition available.	
FVOL	Fluid volume	The amount of space occupied by a three-dimensional object as measured in cubic units.	http://www.m-w.com/

PHY PHYSIOLOGICAL EFFECT			
GAEX	Glycolic acid excretion	Excretion of glycolic acid, which often serves as a basic component of the extracellular compounds of microalgae and is also the main substrate of photorespiration.	
GFRT	Glomerular Filtration Rate	No definition available.	
GLGN	Glucogenesis	The making of molecules of the sugar glucose within a living cell from something other than glycogen (a polysaccharide of glucose molecules).	http://cancerweb.ncl.ac.uk/omd/
GLSY	Glycogen synthesis	The rate at which glycogen is produced in an organism.	
GLUP	Glucose uptake	Amount of glucose taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
GLYU	Glycine uptake	Amount of glycine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
GPHY	Physiology, General	Change in the organic processes or functions of a plant or an organism. Examples of effects in this category include caloric content, cough frequency, granule or concretion formation, heartbeat, membrane permeability, metabolic stress, osmoregulation, , urine frequency, ventilatory rate.. Used when more than one measurement is coded for an ACQUIRE record.	Currently an ACQUIRE ONLY code.
GRAU	Granule/Grain Creation	No definition available.	
GSTF	Gas Transfer	No definition available.	
GYCU	Glycerol uptake	Amount of glycerol taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
GYEX	Glycolate excretion	The excretion of a salt or ester of glycolic acid.	http://cancerweb.ncl.ac.uk/omd/
H3BD	Hemicholinium-3 binding	A potent inhibitor of the high affinity uptake system for choline. It has less effect on the low affinity uptake system. Since choline is one of the components of acetylcholine, treatment with hemicholinium can deplete acetylcholine from cholinergic terminals.	http://cancerweb.ncl.ac.uk/omd/
H3UP	H-3 Uptake	Amount of H-3 taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP

PHY PHYSIOLOGICAL EFFECT			
HCFX	Hydrogen carbonate flux	Rate of movement of Hydrogen Carbonate ions across membranes	
HGUP	Mercury uptake	Amount of mercury taken in by an organism or an organism's tissues.	
HLSS	Alopecia, Hair loss	Absence of hair from skin areas where it is normally present.	
HPRR	Heat production rate	No definition available.	
HPSR	High pressure	Increase in pressure in an organ or tissue	(BPK)
HTDP	Heart Double Product	Heart rate * cardiac output.	
HTRT	Heart Rate	No definition available.	
HYDR	Hydration	The incorporation of molecular water into a complex molecule with the molecules or units of another species.	
HYPR	Hyperactivity	General restlessness or excessive movement such as that characterizing children with attention deficit disorder or hyperkinesis	http://cancerweb.ncl.ac.uk/omd/
HYTN	Hypertension	Persistently high arterial blood pressure. Hypertension may have no known cause (essential or idiopathic hypertension) or be associated with other primary diseases (secondary hypertension).	http://cancerweb.ncl.ac.uk/omd/
INRE	Input resistance	The input resistance, is defined as the ratio between the strengths of the resultant voltage response and the current that is injected in a neuron.	http://mrh.niddk.nih.gov/hagai/publ/decpoi/DefMeth.html
<IOUP>	Ion Uptake	No definition available.	
IUPT	Iodine Uptake	Amount of iodine taken in by an organism or an organism's tissues.	per Cobalt uptake in SOP
IRRI	Irritation	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
IVCD	Intraventricular conduction defects	Nonspecific intraventricular conduction defects are diagnosed when the QRS is modestly prolonged (< 120 msec) and the QRS pattern and axis are not typical of a hemiblock. The conduction delay is considered to occur beyond the Purkinje's myocardial gates and arises from slow cell-to-cell conduction. The phenomenon is common in patients with acute MI. No treatment is indicated.	
JRAC	Junctional resistance (AC)	Measured by AC current. Measured junctional resistance is isolated from ground potential by seals and peripheral membrane resistances.	http://link.springer.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100 .
JRDC	Junctional resistance (DC)	Measured by DC current. Measured junctional resistance is isolated from ground potential by seals and peripheral membrane resistances.	http://link.springer.com/link/service/journals/00424/fpapers/esc/contents/02/00896/paper/s00424-002-0896-8ch100 .
KUPT	Potassium Uptake	No definition available.	
LABS	Leucine absorption	The absorption of leucine into an organism	
LDGT	Lipid digestion	The conversion of lipid, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	
LDMT	Lipid metabolism	Metabolism of lipid or fat by an organism	ECOTOX Staff
LDPX	Lipid Peroxidation	No definition available.	
LEUT	Leucine Transport	The transport of the most abundant amino acid found in proteins. Confers hydrophobicity and has a structural rather than a chemical role.	http://cancerweb.ncl.ac.uk/omd/
LPBS	Lipid biosynthesis	The building up of a chemical compound in the physiologic processes of a living organism, in this case lipids.	http://cancerweb.ncl.ac.uk/omd/

PHY PHYSIOLOGICAL EFFECT			
LTPT	Long-term potentiation	A prolonged increase in synaptic responses that can be induced in certain neural pathways by a brief tetanic stimulation.	ECOREF#75007
LTSP	Leucine transport	The transport of leucine in an organism.	
MBCR	Metallothionein Binding Capacity Ratio	The ratio of toxicant to toxicant-binding capacity of metallothionein (MT) in tissues. The ratio of unbound metal to metal binding capacity of metallothionein within an organism.	
MCCL	Malocclusion	Inappropriate contact between the teeth on closure.	
MCCN	Microorganism Cenosis	A group of organisms in a self-sufficient community naturally occupying a small area with a uniform environment throughout.	
MCUS	Mucus Production	No definition available.	
MGUP	Magnesium Uptake	No definition available.	
MILK	Milk	A fluid secreted by the mammary glands of females for the nourishment of their young.	http://www.m-w.com/
MNER	Mineralization	Process of converting mineral or inorganic form.	http://www.m-w.com/
MNTL	Manganese translocation	The ability of an organism to move manganese from one location to another.	
MNUP	Manganese Uptake	No definition available.	
MSTR	Metestrus	Short period following estrus during which the phenomena of estrus subside in those animals in which pseudopregnancy does not occur.	http://cancerweb.ncl.ac.uk/omd/
MYCO	Mycorrhizal Colonization	No definition available.	
NAFX	Sodium flux	Rate of movement of sodium ions across membranes.	
NASM	Nitrogen assimilation	Amount of nitrogen assimilated.	
NAST	Nastic Movements	Movement of a flat plant part, oriented relative to the plant body and produced by diffuse stimuli causing disproportionate growth or increased turgor pressure in the tissues of one surface.	

PHY PHYSIOLOGICAL EFFECT			
NAUP	Sodium uptake	The ability of an organism to remove sodium from a substrate and take sodium into its body.	
NCOS	Na and Cl osmolality	The fractional contribution of Na ⁺ and Cl ⁻ to osmolality (Na ⁺ + Cl ⁻ /osmolality).	ECOREF 48368
NEXC	Nitrogen excretion	Nitrogen excreted by organism.	
NFIX	Nitrogen Fixation	Change in ability of plants to fix nitrogen.	
NIUP	Nickel Uptake	No definition available.	
NMYC	Non-mycorrhizal colonization	No definition available.	
NPRA	Net Photosynthetic Rate	No definition available.	
NRGF	Metabolic efficiency	No definition available.	
NRGI	Energy intake	No definition available.	
NRGM	Metabolized energy	No definition available.	
NRGX	Energy excreted	No definition available.	
NRSP	Neuroresponse	No definition available.	
NRUP	Neutral Red Uptake	No definition available.	
NRXN	Nerve reaction	Amount of time or a response of a nerve to a stimulus.	
NTSL	Nitrogen translocation	The ability of an organism to move nitrogen from one location to another.	
NUPT	Nitrogen Uptake	No definition available.	
NVAR	Nerve absolute refractory period	The period following excitation when no response is possible regardless of the intensity of the stimulus.	http://cancerweb.ncl.ac.uk/omd/
NVCV	Nerve conduction velocity	Time it takes for a nerve to transmit a signal.	
NVRR	Nerve relative refractory period	The period between the effective refractory period and the end of the refractory period; fibres then respond only to high intensity stimuli and the impulses conduct more slowly than normally.	http://cancerweb.ncl.ac.uk/omd/
OCCP	Oxygen Carrying Capacity	No definition available.	

PHY PHYSIOLOGICAL EFFECT			
OSFG	Osmotic fragility	The susceptibility, or lack of resistance, of erythrocytes to haemolysis when exposed to increasingly hypotonic saline solutions. Measured by the erythrocyte fragility test.	http://cancerweb.ncl.ac.uk/omd/
OSMO	Osmolality	The osmolality of an ideal solution of a nondissociating substance that exerts the same osmotic pressure as the solution being considered.	
OXYG	Oxygen Consumption	Quantifiable change in oxygen uptake by the test organism.	for plants see PSYN (photosynthesis).
OXYT	Oxygen Tension, Partial Pressure of Oxygen Dioxide, Po2	No definition available.	
PAMP	P amplitude	The P wave represents atrial depolarization - the time necessary for an electrical impulse from the sinoatrial (SA) node to spread throughout the atrial musculature.	http://www.utoledo.edu/~xflores/ekgs-interpretation.htm
PAEX	Primary amine excretion	Excretion of an amine containing the amido group, or a derivative of ammonia in which only one atom of hydrogen has been replaced by a basic radical; -- distinguished from secondary & tertiary amines.	(Merriam-Webster Medical Dictionary)
PBAL	Ponderal balance	Is equal to [(Urine + Feces - Drinking Water - Consumed Food + (Weight Change/Initial Weight)) * 100]	ECOREF 56796
PBEX	Lead excretion	Lead excreted by organism.	
PBUP	Lead Uptake	No definition available.	
PDGT	Protein digestion	The conversion of protein, in the stomach and intestines, into soluble and diffusible products, capable of being absorbed by the blood.	
PERA	Protein Efficiency Ratio	No definition available.	
PERM	Permeability, tissue, membrane	The ability of a membrane or other material to permit a substance to pass through it.	
PEXC	Phosphorus excretion	Phosphorus excreted by organism.	

PHY PHYSIOLOGICAL EFFECT			
PGPL	Pigment plug ejection	A disturbance of the digestive system where the ejection of pigment plugs from the rectum occurs	ECOREF#65576
PGSY	Prostaglandin synthesis	Any of a group of components derived from unsaturated 20 carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway that are extremely potent mediators of a diverse group of physiologic processes. The abbreviation for prostaglandin is PG, specific compounds are designated by adding one of the letters A through I to indicate the type of substituents found on the hydrocarbon skeleton and a subscript (1, 2 or 3) to indicate the number of double bonds in the hydrocarbon skeleton for example, PGE2. All of the prostaglandins act by binding to specific cell surface receptors causing an increase in the level of the intracellular second messenger cyclic AMP (and in some cases cyclic GMP also). The effect produced by the cyclic AMP increase depends on the specific cell type. Increased cyclic AMP increases prostaglandin synthesis leading to further increases in cyclic AMP. See also individual prostaglandins.	http://cancerweb.ncl.ac.uk/omd/
PIGM	Pigmentation	Quantitative (ie., compared to the control) change in the pigment, e.g. melanization.	Does not include chlorophyll (see CLR). If pigment levels are reported code in BCM.
PNUT	Phosphorus not excreted	Phosphorus utilized/Calcium ingested * 100.	
PPUP	Phosphate uptake	The ability of an organism to remove phosphate from a substrate and take phosphate into its body.	
PRET	Phosphorus retained	Phosphorus retained/Calcium ingested * 100.	
PRIN	PR Intervals	The PR interval measures the beginning of arterial depolarization through the beginning of ventricular depolarization.	
PRSY	Protein Synthesis	No definition available.	
PRUT	Phosphorus retention to utilization ratio	Ratio of Phosphorus retained (Utilized - Transferred to Egg) to Phosphorus utilized (ingested - excreted).	

PHY PHYSIOLOGICAL EFFECT			
PSII	Photosystem II (PSII) Electron Transport Activity	No definition available.	
PSSR	Pressure	The act of pressing, or the condition of being pressed; compression; a squeezing; a crushing.	
PSTR	Proestrus	Phase of the estrous cycle preceding estrus during which the Graafian follicle undergoes maturation. Applies to animals.	http://cancerweb.ncl.ac.uk/omd/
PSYN	Photosynthesis	Change in plant productivity indicated by change in ^{14}C or CO_2 uptake or oxygen production.	
PTIM	Prothrombin time	The clotting of blood, also known as coagulation time or clotting time.	
PTRN	Phosphorus transfer	Per cent of phosphorus transferred to the egg, $\text{Phosphorus in egg} / \text{Phosphorus utilized} \times 100$.	
PTUC	Protein Utilization Coefficient	No definition available.	
PTUT	Phosphorus transfer to utilization ratio	Percent of phosphorus transferred to the egg in relation to phosphorus utilized.	
PUPT	Phosphorus Uptake	No definition available.	
QAMP	Q amplitude	Depolarization of the septum. It is the first downward (negative) deflection before the R wave.	http://www.udel.edu/HESC/physLab/TotalReview.htm
QRSV	Decreased QRS voltage	QRS Complex = The deflections in an electrocardiographic tracing and represent ventricular activity of the heart.	
QTIN	QT Interval	Time from electrocardiogram Q wave to the end of the T wave corresponding to electrical systole.	http://cancerweb.ncl.ac.uk/omd/
RAMP	R amplitude	Depolarization of the apex. It is a upward (positive) deflection.	http://www.udel.edu/HESC/physLab/TotalReview.htm
RBCD	Relative bradycardia	Bradycardia = slow heart rate.	

PHY PHYSIOLOGICAL EFFECT			
RCRA	Renal Clearance Ratio	No definition available.	
RESP	Respiration, O ₂ Production, CO ₂ Production	No definition available.	
RESQ	Respiration Quotient	No definition available.	
RPRT	Respiratory Rate	No definition available.	
SAMP	S amplitude	Depolarization of the ventricular wall. The S wave a downward (negative) deflection after an R wave.	http://www.udel.edu/HESC/physLab/TotalReview.htm
SBNF	Swim bladder inflation	The ability for inflation of the swim bladder, a gas filled cavity found in the body cavity of most bony fishes.	
SCGR	Scope for Growth	SFG= (energy consumed * assimilation efficiency) - energy lost through respiration.	
SENE	Senescence	The study of the biological changes related to aging.	
SENI	Senescence Induced/Accelerated	No definition available.	
SENR	Senescence Retarded	No definition available.	
SEUP	Selenium Uptake	No definition available.	
SIDP	Siderophore production	Production of natural iron binding compounds that chelate ferric ions (which form insoluble colloidal hydroxides at neutral pH and are then inaccessible) and are then taken up together with the metal ion.	http://cancerweb.ncl.ac.uk/omd/
SLVN	Salivation	To have a flow of saliva especially in excess.	Webster's
SMTR	Standard Metabolic Rate	An ectothermic animal's resting and fasting metabolism at a given body temperature.	http://www.cartage.org.lb/en/themes/Sciences/Zoology/AnimalPhysiology/Glossary/S/standardmetabolicrate.htm

PHY PHYSIOLOGICAL EFFECT			
SOXA	Sulfide oxidation activity	No definition available.	
SOXG	Superoxide Generation	No definition available.	
SRLO	Spectral Reflectance/Shift to Longer Wavelengths	No definition available.	
SRSH	Spectral Reflectance/Shift to Shorter Wavelengths	No definition available.	
STAS	Stasis	A state of static balance or equilibrium.	
STCG	S-T changes	Related to EKG, S-T Segment. The line between the end of the S wave and the beginning of the T wave.	
STIN	ST interval	Time interval from the ending of the S-wave until the ending of the T-wave (in milliseconds).	http://bct.tn.utwente.nl/Definitions.htm
STOC	Stomatal Conductance	A plant property related to the ease with which water vapor escapes from plant leaves through small pores in the leaves know as stomata.	http://www.co2science.org/dictionary/define_s.htm
STOM	Stomatal Aperture	No definition available.	
STVL	Stroke volume	The total volume of blood pumped by the heart in a single beat.	
STWK	Stroke Work	The work done by the ventricle to eject a volume of blood into the aorta.	http://www.oucom.ohiou.edu/CVPphysiology/CF019.htm
SUPT	Sulfur uptake	A nonmetallic element that occurs either free or combined especially in sulfides and sulfates, is a constituent of proteins, exists in several allotropic forms including yellow orthorhombic crystals, resembles oxygen chemically but is less active and more acidic, and is used especially in the chemical and paper industries, in rubber vulcanization, and in medicine for treating skin diseases.	

PHY PHYSIOLOGICAL EFFECT			
SWEL	Swelling	No definition available.	
SYPS	Systolic Pressure	The pressure exerted on the walls of the arteries during the contraction phase of the heart. Considered abnormally elevated if consistently over 150 mmHg. Systolic blood pressure varies with age, sex, size and relative condition.	http://cancerweb.ncl.ac.uk/omd/
SZRE	Seizure	A sudden attack or convulsion due to involuntary electrical activity in the brain.	http://cancerweb.ncl.ac.uk/omd/
T34C	T3/T4 Conversion rate	The turnover of T3 divided by the turnover of T4 times 100 is the conversion rate.	ECOREF 65157
TAMP	T amplitude	The T wave represents the repolarization of the ventricles. On rare occasions, a U wave can be seen following the T wave.	http://www.utoledo.edu/~xflores/ekgs-interpretation.htm
TEAR	Lacrimation, Tearing	Shedding of tears.	
TEUR	Total Excreted Urea	No definition available.	
TEVG	trans-epithelial voltage gradient	Measured by an electro-olfactogram. Ions of opposite charge actively transported across the apical membrane barrier through the paracellular pathway in response to the transepithelial voltage gradient. The osmotic gradient created by the net transepithelial flow of ions thus provides the driving force for liquid movement across the airway epithelium.	http://jap.physiology.org/cgi/content/full/91/2/797
TEXT	Texture Change	No definition available.	
THBR	Thyroid Hormone Binding Ratio	Recommended nomenclature for T3 Uptake test. A ratio of the solid matrix uptake and the serum uptake.	http://www.abbottdiagnostics.com/glossary/glossary_t.htm
THRG	Thermoregulation	No definition available.	
TIRD	Languid, tired, weak	Drooping or flagging from exhaustion; indisposed to exertion; without animation; weak.	
TNST	Tensile Strength	The maximum stress a material subjected to a stretching load can withstand without tearing.	http://cancerweb.ncl.ac.uk/omd/
TRAN	Transpiration	The passage of a gas or liquid (in the form of vapor) through the skin, a membrane, or other tissue.	

PHY PHYSIOLOGICAL EFFECT			
USTS	Unknown estrus stage	Unknown/undetermined stage of the estrus cycle.	
VENT	Ventilation, Opercular Movements, Undulatory Movements	No definition available.	
VMRS	Vasomotor response	Vasomotor = Pertaining to the regulation of the constriction or expansion of blood vessels.	
VSCR	Vascular resistance	An expression of the resistance offered by the systemic arterioles, and to a lesser extent by the capillaries, to the flow of blood.	http://cancerweb.ncl.ac.uk/omd/
WLSS	Water loss	A decrease in water in cells, organs tissues or bodies.	(BPK)
WTUP	Water uptake	No definition available.	
WILT	Wilt	No definition available.	
ZNUP	Zinc Uptake	No definition available.	

POP POPULATION GROUP			
POP POPULATION EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ABND	Abundance (Number of Organisms/Area; Density)	Number of individuals of a taxon per unit area equivalent to density. Comparison to controls; not related to time.	Use for coding efficacy of removal of lice from fish.
BMAS	Biomass;	Includes Harvest Yield, Fruit or Seed Yield, Mass of Organism, Mass of Population.	
CHLA	Chlorophyll A Content	Pigment found in photosynthetic cells; occurs in all organisms exhibiting aerobic photosynthesis.	
CHLO	Chlorophyll Content	Pigment found in photosynthetic cells. Measurable change in chlorophyll content including chlorophyll content, chlorosis.	

POP POPULATION EFFECT			
CNTL	Control	To reduce the incidence or severity of, especially of weeds or insects to innocuous levels.	
COVR	Cover, Canopy	Area covered by canopy.	
DBLT	Population doubling time	The time (usually reported in years) that it takes a population to double its present size.	
DBMS	Dry Biomass	Biomass measured on a dry weight basis	
DRFT	Drift	Change in the number of larval aquatic insects to travel a given distance in a stream.	
DVRS	Diversity, Evenness	Change in number of species in a given area or index of species diversity (e.g. species richness, evenness).	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
GENT	Generation Time	No definition available.	
GPOP	Population Changes, General	Used when more than one measurement is coded for an ACQUIRE record.	
INDX	Index to Population Size; Count, Number, Abundance	No definition available.	
IRIN	Intrinsic Rate of Increase	No definition available.	
LAGT	Lagtime	No definition available.	
LCON	Length/duration of a chemical effectiveness	Represents the duration of time that a chemical retains its efficacy against a species or population. Usually reported as the first day after application that a species appears in the treated area.	BPK
LCYC	Lifecycle	Total time taken by adults to produce new adults.	
NCHG	Population Change (Change in N/Change in Time)	No definition available.	
NGEN	Number of generations	Number of generations in a population.	
PBMS	Biomass or Weight of Entire Population	No definition available.	

POP POPULATION EFFECT			
PBRA	Biomass Turnover Ratio (Population/Biomass)	A measure that depends directly on growth and reproduction and indirectly on fertility through the rate of increase.	
PCCP	Population Carrying Capacity	Change in the carrying capacity of the population.	
PGRT	Population Growth Rate	Rate of growth. Equivalent to intrinsic rate of increase and maximum possible rate of growth for species populations and colonies. Calculated by relating biomass or abundance to time. Life table data, germination rates are also included.	
PSYN	Photosynthesis	Photosynthesis of an entire population usually algae. Change in productivity indicated by change in ^{14}C or CO_2 uptake or oxygen production.	
PRPE	Predator/Prey Dynamics	No definition available.	
RCLN	Colonization Rate	Change in ability to colonize an uninhibited substrate under toxicant stress.	
RCPR	Recapture Ratio	Measure of size of an animal population; used to estimate the population size of a single species of highly mobile animals	
SEXR	Sex Ratio	No definition available.	
STTL	Settling	No definition available.	
SURF	Surface Area	No definition available.	
SZDS	Size distribution	Number of organisms at certain lengths or weights measured within a population.	
THCH	Thatch accumulation	No definition available.	
TRAP	Trappability	No definition available.	
VIDX	Viability index	Number of survivors on day 4/numbers of survivors on day 1.	
WGHT	Weight	No definition available.	

REP REPRODUCTION GROUP

REP REPRODUCTIVE EFFECT

Measurement Code	Measurement Name	Measurement Definition	Notes
ORSM	No resorbed embryos	No resorbed embryos.	
<ABNM>	Abnormal	Effects which occur to the organism that has been directly exposed (compare to teratogenic effects). Effects included under this measurement include nonspecific physical malformations, deformities, defects, discoloration, anomalies, vegetative vigor, etc.	DO not code REP ABNM. ABNM should be coded under MPH (when adult body structures are changing) or DVP (when embryo or juveniles are becoming abnormal throughout different lifestages)
ABRT	Abort	To miscarry; to bring forth young prematurely.	http://cancerweb.ncl.ac.uk/omd/
AFST	Atretic follicle stage	The stage of development of the follicles in the ovary marked by degenerative follicles with shrunken, irregular borders.	ECOREF 52243
BDEP	Bird day egg production	Number of eggs produced/number of birds alive * 100.	
<BMAS>	Biomass;	Includes Harvest Yield, Fruit or Seed Yield, Mass of Organism, Mass of Population.	
BNDG	Pair Bonding Nesting Behavior	No definition available.	
BRED	Bred	To propagate plants or animals sexually.	
BTCF	Beat/Cross frequency	A standard sperm motility measurement, the beats per second divided by the number of times the head crosses the mean head trajectory per second.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846

REP REPRODUCTIVE EFFECT			
CLLT	Clutch length	Number of days in a row on which a hen lays an egg is referred to as the clutch length.	
CLNE	Cloning efficiency	The ability of an organism to produce clones.	
CLPD	Clutch production	The time it takes to produce a clutch or the number of eggs in a clutch.	
CLUB	Clubbing (Hydra Reproduction)	No definition available.	
COUR	Courtship Behavior, Sexual behavior	No definition available.	
CRCE	Circular cells	A standard sperm motility measurement, the number of spermatozoa swimming in circles.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
CYNG	Care of Young, Nest Attentiveness	No definition available.	
EBCN	Effective Body Concentration	The body residue of a chemical that is associated with an effect.	
EGPN	Eggs per Nest or clutch	No definition available.	
EREM	Early resorbed embryos	Embryos resorbed during the early part of the reproductive cycle.	
FCND	Fecundity	The innate potential reproductive capacity of the individual organism, as denoted by its ability to form and separate from the body the mature germ cells.	
FERT	Fertile, Fertility	Fertility - The capacity to conceive or induce conception.	
FERZ	Fertilization	The physiochemical processes involved in the union of the male and female gametes to form the zygote.	
FIDX	Fertility index	(Number fertile/Number cohabitated)*100.	
FRUT	Fruit, fruiting	The usually edible reproductive body of a seed plant; especially : one having a sweet pulp associated with the seed.	Webster's

REP REPRODUCTIVE EFFECT			
FTCC	Fertile cocoons	No definition available.	
FLOR	Floral Induction	No definition available.	
FRMS	Frames, Bees	No definition available.	
FRUH	Percent Fruit Harvested	No definition available.	
GCCT	Germ cell count	Number of sperm or eggs in the gonad or sample.	
GERM	Germination	The beginning or the process of development of a spore or seed.	
GEST	Gestation Rate	The percentage of mated females that delivered at least one viable fetus	ECOREF 58044
GFST	Graafian follicle stage	The stage of development of the follicles in the ovary marked by large follicles bordered by an amphophilic egg membranes with a central core of eosinophilic yolk proteins.	ECOREF 52243
GMET	Gamete production	Creation of a sex cell, egg, or sperm.	
GIDX	Gestation Index	No definition available.	
GMEN	Germination Energy	$GE = [(n1-n0)/t1 + (n2-n1)/t2 + (n3-n2)/t3 + \dots (ni-ni-1)/ti] * 100/R = 0/0$ <p>n1, n2, n3...ni = Cumulative germination counts on consecutive days</p> <p>t1, t2, t3...ti = numbers of days after beginning of test</p> <p>R = constant obtained by dividing 100 (which is a perfect germination percentage value for any species) by number of days on which first germination evaluations were made under international rules</p>	
GREP	Reproduction, General	Change in male and/or female reproductive ability; fertilization and fertilization rate; vegetation reproductive processes. Used when more than one measurement is coded for an ACQUIRE record.	
GSTT	Gestation Time	Gestation period = The period in mammals from fertilization to birth.	
HDEP	Hen-day egg production	Number of eggs produced / number of live hens x 100.	

REP REPRODUCTIVE EFFECT			
HHEP	Hen-housed egg production	The cumulative number of eggs produced by the flock divided by the number of birds originally placed in the flock.	http://www.aphis.usda.gov/vs/ceah/cahm/Poultry/lay99de2.htm
IFCC	Infertile cocoons	No definition available.	
INFL	Inflorescence	The group or arrangement in which flowers are borne on a plant. Number of flowers on a plant.	http://cancerweb.ncl.ac.uk/omd/
INFT	Infertile	No definition available.	
LACG	Lactating	To secrete milk.	http://www.m-w.com/
LHMN	Mean amplitude of lateral head displacement	A standard sperm motility measurement, the average of all deviations of the head displacement from the mean head trajectory.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LHMX	Maximum amplitude of lateral head displacement	A standard sperm motility measurement, the maximal deviation of the head displacement from the mean head trajectory.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LIDX	Lactation index	Percent of animals alive at the 4 days that survive the 21 day lactation period.	
LNRY	Linearity	A standard sperm motility measurement, the distance in straight line divided by actual distance traveled.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
LRM	Late resorbed embryos	Embryos resorbed during the late part of the reproductive cycle.	
MIDX	Mating index	Number of animals with seminal plugs or sperm/number of animals mated times 100.	www.ilo.org/public/english/protection/safework/ghs/ghsfinal/ghsc11.pdf
MONT	Mounting, Copulation, Intercourse, Mating	A reproductive behavior in which one animal climbs atop a second animal. Also copulation, intercourse, and mating.	
MOTL	Motility	Sperm motility.	

REP REPRODUCTIVE EFFECT			
MSPW	Mean spawns per female	The mean number of times a female has spawned.	
NANT	Nests Abandoned	No definition available.	
NCLU	Corpus Lutea, Number of	No definition available.	
NDAY	Number of Days Between Eggs Laid	No definition available.	
NEGI	Number of Eggs Incubated	No definition available.	
NINC	Number of Nests Incubated	No definition available.	
NMNT	Non-mount	A reproductive behavior which does not occur. This includes one animal climbing atop a second animal. Also copulation, intercourse, and mating.	
NOIM	Number of implantations	The number of embryos that attached to the maternal uterine wall.	http://www.m-w.com/
NOPN	Number of Organisms per Nest	No definition available.	
NPOD	Number of Pods	No definition available.	
NPRG	Not pregnant	Not containing unborn young within the body.	
NREP	Non-reproducing organisms	Barren plants or organisms.	
NRPR	Net Reproductive Rate	(Ro) Average number of offspring or seeds produced by an individual in a population during its lifetime. Figured by the life table equation: $Ro = \sum l_x m_x$, where l_x = the probability of survival from birth to age x and m_x = the average number of births per individual of age x.	www.muw.edu/~mharvill/studch10.rtf and Population Biology: The Evolution and Ecology of Populations, Chapter 12, P.W.Hedrick
NSNT	Successful Nests	No definition available.	
NSPN	Number Spawning	No definition available.	

REP REPRODUCTIVE EFFECT			
NSTS	Number of Active Nests	No definition available.	
NSTI	Nest Initiation	No definition available.	
NSTS	Number of Nests Produced	No definition available.	
NTSZ	Nest Size	No definition available.	
NUNT	Unsuccessful Nests	No definition available.	
NVIB	Non-viable	Not capable of living; especially : not capable of surviving outside the womb without artificial support.	Webster's
OBRD	Open Brood	No definition available.	
OEGP	Onset of Egg Production	No definition available.	
OOCY	Fully Developed Oocytes	No definition available.	
OVRT	Ovulation Rate	No definition available.	
PCNT	Placentation	In mammals, the process of a placenta forming during gestation. In plants, the arrangement of placentas, and hence of ovules, within an ovary.	http://cancerweb.ncl.ac.uk/omd/
PFST	Primary follicle stage	The stage of development of the follicles in the ovary marked by large nucleus, abundant basophilic cytoplasm and no yolk vesicles.	ECOREF 52243
PILS	Post-implantation loss	The loss of implanted embryos. This is calculated by determining the ratio of dead to total implants from the treated group compared to the ratio of dead to total implants from the control group.	
PIPD	Pipped	No definition available.	
PLBR	Pairs with Litter or Brood	No definition available.	
PREG	Pregnant, paris or gravid	Containing unborn young within the body , distended with or full of eggs.	

REP REPRODUCTIVE EFFECT			
PRFM	Pregnant Females in a Population	No definition available.	
PROG	Progeny	Includes Counts, Numbers, Clutch, Litter or Brood Size, Progeny Produced Within a Specified Time Period, Numbers of Progeny per Parent Organism.	
PRPL	Preimplantation loss	Loss of an embryo before uterine implantation.	http://www.m-w.com/
PRTTH	Parthenocarpy	Production of fruit without fertilization.	
PSPG	Pseudopregnancy	False pregnancy. The term sometimes refers also to the premenstrual stage of the endometrium because it resembles the endometrium just before implantation of the blastocyst.	http://cancerweb.ncl.ac.uk/omd/
PSTG	Stage of Pregnancy	No definition available.	
RBEH	Reproductive Behavior Changes	No definition available.	
REPO	Reproducing organisms	Organisms that have produced offspring.	
RPLM	Repeat bloom	Repeat bloom, or bloom in the next year.	http://www.cahe.nmsu.edu/pubs/_h/h-321.html)
RPRD	Reproductive Capacity	No definition available.	
RSEM	Resorbed Embryos	No definition available.	
RSUC	Reproductive Success (General)	No definition available.	
SBRD	Sealed Brood	No definition available.	
SDIX	Seed Index	Grams per 100 seeds.	definition from paper
SEED	Seed Number	No definition available.	
SEPD	Seed or spore production	Production of seed or spore by vegetative process	

REP REPRODUCTIVE EFFECT			
SFST	Secondary follicle stage	The stage of development of the follicles in the ovary marked by the presence of numerous eosinophilic yolk vesicles.	ECOREF 52243
SPCL	Sperm Cell Counts	No definition available.	
SPMC	Spermatocytes	A cell giving rise to sperm cells; especially : a cell that is derived from a spermatogonium and ultimately gives rise to four haploid spermatids.	Webster's
SPMG	Spermatogonia	A primitive male germ cell.	
SPNF	Spawning frequency	The number of times an organism spawns.	
SPRD	Sporophyte Production	No definition available.	
SSET	Seed Set (No. Seeds/No. Florets)	No definition available.	
STRL	Sterility	The inability to reproduce because of congenital or acquired reproductive system disorders involving lack of gamete production or production of abnormal gametes.	
T50P	Time to 50% production	Number of days to achieve 50% egg production.	
TFPG	Time to first progeny	Number of days to produce first litter.	
TMNT	Time to mounting	Time it takes for a reproductive behavior to be exhibited. This includes one animal climbing atop a second animal. Also copulation, intercourse, and mating.	
TPRG	Time to pregnancy/gravidity	Time from mating to first gravidity.	
<TPRD>	Total Production	No definition available.	
TSPN	Time to Spawn	No definition available.	
TTPR	Time to peak reproduction	The time it take for adults to reach peak reproductive output.	
TUPR	Tuber production	Tuber = The enlarged end of a rhizome in which food accumulates, as in potato.	

REP REPRODUCTIVE EFFECT			
VAOP	Vaginal opening	A method used to determine puberty in a female organism. Also called vaginal patency.	http://www.epa.gov/scipoly/oscp/endo/docs/edmv/s/femalearrayprotocol0830ed02.pdf
VCTY	Velocity	A standard measure of sperm motility, the total distance traveled divided by time.	Proc. Natl. Acad. Sci. (1997) Vol. 94, pp. 6842-6846
VEGR	Vegetative Reproduction	No definition available.	
VIAB	Viable Offspring or Seed	No definition available.	
VPLG	Vaginal/Copulatory plug	A plug formed by the coagulation of semen; found in the vagina after copulation in certain animals, such as the baboon, rat, and squirrel.	http://cancerweb.ncl.ac.uk/omd/

AEG AVIAN EGG EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
ALEG	Albumen Eggshell Quality (Haugh Units)	Haugh Units Scale objectively combines the thickness of the egg albumen and the weight of the egg to a single score that can be compared across all types of eggs.	http://www.sunnyqueen.com.au/03_quality/quality.htm
BLSP	Blood spots	Also called meat spots. Occasionally found on an egg yolk. Contrary to popular opinion, these tiny spots do not indicate a fertilized egg. Rather, they are caused by the rupture of a blood vessel on the yolk surface during formation of the egg or by a similar accident in the wall of the oviduct. Less than 1% of all eggs produced have blood spots.	http://www.georgiaeggs.org/pages/bloodspots.html
BSCP	Basal cap	A roughly circular mass of crystalline material that tips mammillae.	
CRAK	Cracking	No definition available.	
ESIN	Eggshell Index	No definition available.	

AEG AVIAN EGG EFFECT			
FERT	Fertile, Fertility	The quality or state of being fertile.	Webster's Use this effect-measurement pair when the fertility of avian eggs is studied.
LGTH	Length	No definition available.	
LSTE	Eggs lost	Eggs missing from the nest (could be due to parents eating eggs or removing eggs from the nest).	
MMMC	Mamillary core	Structures composed of organic knobs which serve as crystallization sites on the outer surface of eggshell membranes.	
QUAL	Quality	No definition available.	
SHLL	Shell, Percent	No definition available.	
SIZE	Size	The physical magnitude, extent, or bulk : relative or proportionate dimensions.	
SOFT	Softness	No definition available.	
STGH	Strength	The quality or state of being strong, power to resist force.	
THIK	Thickness	Having or being of relatively great depth or extent from one surface to its opposite.	
VIAB	Viable	No definition available.	
VOLU	Volume	The amount of space occupied by a three-dimensional object as measured in cubic units (as quarts or liters) : cubic capacity.	
WDTH	Width	The horizontal measurement taken at right angles to the length.	
WGHT	Weight	The heaviness of an object.	
YOLK	Yolk, Percent	No definition available.	

SYS ECOSYSTEM GROUP			
PRS SYSTEM PROCESSES EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
BGCM	Biogeochemical	Changes in whole system biogeochemical processes, e.g. sulfate reduction, denitrification, methanogenesis, nitrification, ammonification, net N or P removal.	
CMIN	Carbon Mineralization	No definition available.	
CO2G	CO ₂ Generation	Carbon dioxide generation in a soil/litter microcosm system.	
CO2P	CO ₂ Evolution	No definition available.	
DCMP	Decomposition	Change in rate of degradation of plant material.	
GPPR	Gross Primary Productivity/Respiration	Change in ratio of system-level gross primary productivity to respiration.	
GPRS	System processes, General	General code for ACQUIRE.	
NITR	Nitrification	No definition available.	
NMIN	Net Mineralization	No definition available.	
OUPT	Oxygen uptake	Oxygen uptake in a soil/litter microcosm system.	
PPRO	Primary Productivity	No definition available.	
SPRO	Secondary Productivity	Change in production of consumer level organisms (e.g. macroinvertebrates).	
SRES	System Respiration	Change in rate of oxygen uptake by entire ecosystem, as opposed to individual or groups of organisms.	
TROP	Efficiency of Trophic Transfer Between Different Levels in the Food Chain; Assimilation Efficiency	Change in efficiency of trophic transfers between different levels in the food chain, e.g. between primary producers and grazers.	

NOC	No GROUP CODE
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NOC No GROUP CODE EFFECT			
Measurement Code	Measurement Name	Measurement Definition	Notes
MULT	Multiple Effects Reported as One Result	Change in more than one effect when data were reported as one result; this code is used with reservation. The use must be verified through consultation with at least one other reviewer to ensure that the effects can not be reported individually.	
<NONE>	None		
NRNR	Endpoint Reported Without a Specific Effect	The author reported an endpoint, but not a specific effect.. This code is used with reservation. The use must be verified through consultation with at least one other reviewer to ensure that there are no effect reported.	
~XXX [This is an EFFECT code- NOT A MEASURENT CODE]	Delayed Effect	Currently an ACQUIRE ONLY code. An effect (xxx) reported after the organisms are transferred to toxicant-free test chambers. A specific exception is clearance prior to tissue analysis; e.g., "after the exposure the organisms were placed in clean water for 10 hours to allow the organism to clear the stomach contents". This type of clearance is distinguished from depuration and is not coded as a delayed effect (see also page 4.C-10). Refer to Section 4.C-5. <u>Test Result Parameters</u> in the guidelines for additional information regarding coding of delayed effects.	

Appendix T. Endpoint Codes and Definitions

ECOTOX ENDPOINTS		
DATABASE USAGE	ENDPOINT	DEFINITION
TERRETOX	ATCN	Asymptotic threshold concentration: The concentration of a chemical at which some percentage of a population of test organisms is in a state of approximate homeostasis for some prolonged period of time.
TERRETOX	BAF	Bioaccumulation factor: A value that is the “ratio of the concentration of a chemical in the organism to that in the medium (usually water). Bioaccumulation refers to both uptake of dissolved chemicals from water (bioconcentration) and uptake from ingested food and sediment residues.” (Casarett et.al. 1986) For TERRETOX, use BAF to reflect concentration/ accumulation in tissues regardless of whether the author addresses the ratio as BAF or BCF. The use of a BCF code in the TERRETOX database will require prior approval.
AQUIRE	BCF	<p>Bioconcentration factor: A term describing the degree to which a chemical can be concentrated in the tissues of an organism in the <i>aquatic environment</i> as a result of exposure to waterborne chemical at steady state during uptake phase. The BCF is a value which is equal to the concentration of a chemical in one or more tissues of the exposed aquatic organism divided by the average exposure water concentration of a chemical in the test. (Rand 1995)</p> <p>Use BCF only when reported by author for water exposures ie., AQUIRE; if BCF reported for terrestrial organisms/plants code as BAF.</p> <p>BCFs of less than 1 and negative BCF values are suspect and should be looked at by the EPA data base coordinator. Reviewers will code the data and send the paper on to the EPA data base coordinator for review and approval. The BCF's less than 1 are coded as reported by the author and negative BCF values are coded as <1.</p>
AQUIRE	BCFD	Bioconcentration factor calculated using dry weight tissue concentration
TERRETOX AQUIRE	ECxx	Effective concentration for xx% of tested organisms.
TERRETOX AQUIRE	EC100	Effective concentration to 100% of test organisms
AQUIRE	EDxx	Effective dose for xx% of tested organisms

ECOTOX ENDPOINTS		
DATABASE USAGE	ENDPOINT	DEFINITION
AQUIRE TERRETOX	ERxx	Tissue concentration of toxicant needed to cause xx% effect in the test population. (ECOREF#51644) The ERxx concentration should be coded into the Concentration field and not the BCF field.
AQUIRE	ETxx	Effective time response to xx% of organisms. The time associated with the response is coded in the DURATION field.
TERRETOX AQUIRE	ICxx	Inhibition concentration to xx% of organisms.
TERRETOX AQUIRE	LCxx	Lethal concentration to xx% of test animals.
TERRETOX AQUIRE	LDxx	Lethal dose to xx% of test animals
AQUIRE	LETC	Lethal Threshold Concentration: Toxicity curve asymptotic concentration indicating an incipient LC50 value. Acute lethal action has essentially ceased.
AQUIRE	LOEC	Lowest observable effect concentration
TERRETOX	LOEL	Lowest-observable-effect-level: lowest dose (concentration) producing effects that were significantly different (as reported by authors) from responses of controls (LOEL/LOEC)
AQUIRE	LRxx	Lethal Residue Concentration. Tissue concentration of toxicant needed to cause xx% mortality in the test population. (ECOREF#20453) The LRxx concentration should be coded into the Concentration field and not the BCF field.
TERRETOX AQUIRE	LTxx	Lethal time, median: time required for xx% of a population to die from a given dose; also reported as "STxx" - survival time for xx% of a population. The time associated with the response is coded in the DURATION field.
TERRETOX AQUIRE	MATC	Maximum Acceptable Toxicant Concentration: Hypothetical threshold concentration that is the geometric mean between the NOEC and LOEC concentration. The term Chronic Value (ChV) is encoded as MATC. Refer to companion endpoint note under LOEC definition
AQUIRE	NOEC	No observable effect concentration

ECOTOX ENDPOINTS		
DATABASE USAGE	ENDPOINT	DEFINITION
TERRETOX	NOEL	No-observable-effect-level: highest dose (concentration) producing effects not significantly different from responses of controls according to author's reported statistical test (NOEAL/NOEC)
TERRETOX AQUIRE	NR	Not reported
AQUIRE	NR-LETH	100% mortality
AQUIRE	NR-ZERO	0% mortality

Appendix U. Response Site Codes

CODE	Site Name	Site Definition/Notes
A		
AB	Aboveground Portion, Plant	
ABD	Abdomen	1. The portion of the vertebrate body between the thorax and the pelvis or the cavity of this part of the body. 2. The elongate region posterior to the thorax in arthropods.
ABP	Abdominal process	Found in a parthenogenic female cladoceran. A long second abdominal process of the post abdomen that extends beyond the base of the anal setae (www.epa.gov/waterscience/wet/disk2/pdf/apxal-a3.pdf)
AD	Adipose Tissue	A type of connective tissue specialized for lipid storage.
ADC	Auditory center	Area of the brain that detects auditory stimulus
AF	Amniotic Fluid	A substance that fills the amnion to protect the embryo from dessication and shock.
AG	Accessory Gland	A mass of glandular tissue separate from the main body of a gland. A gland associated with the male reproductive organs in insects.
AL	Albumen	Egg white
AM	Adductor Muscle	Any muscle that draws a part of the body toward the median axis.
ANG	Antennal Gland	(Green gland) An excretory organ in the cephalon of adult crustaceans
ANT	Antenna (Antennae)	A movable, articulated organ of sensation, attached to the heads of insects and Crustacea. There are two in the former, and usually four in the latter. They are used as organs of touch, and in some species of Crustacea the cavity of the ear is situated near the basal joint. In insects, they are popularly called horns, and also feelers. The term is also applied to similar organs on the heads of other arthropods and of annelids. (http://cancerweb.ncl.ac.uk)
AO	Anogenital	Pertaining to the anus and external genitals.
AP	Appendages	Any subordinate or nonessential structure associated with a major body part. Any jointed, peripheral extension, especially limbs, or arthropod and vertebrate bodies.

CODE	Site Name	Site Definition/Notes
AR	Adrenal Gland	An endocrine organ located close to the kidneys of vertebrates and consisting of two morphologically distinct components, the cortex and medulla.
ART	Artery	A vascular tube that carries blood away from the heart.
AS	Air Sac	One of large, thin-walled structures associated with the tracheal system of some insects. In birds, any of the small vesicles that are connected with the respiratory system and located in bones and muscles to increase buoyancy.
AT	Alimentary Tract	Pertaining to the organs of digestion
ATA	Aorta	The largest artery in the body which has its origin at the heart. It gives off branches to the extremities, neck and major organs for the purpose of supplying oxygenated blood. (Gray's)
ATH	Abdomen and thorax	Sample consists of abdomen and thorax tissue.
ATM	Atrium	The chamber or either of the chambers of the heart that receives blood from the veins and forces it into the ventricle or ventricles Webster's
AX	Axons	The process or nerve fiber of a neuron that carries the unidirectional nerve impulse away from the cell body.
B		
BA	Bark	
BB	Bulb	
BC	Buccal mass	
BCT	Bract	A leaf-like structure, different from the foliage leaves and without an auxiliary bud, associated with an inflorescence or flower (Gray's)
BD	Bud	An embryonic shoot containing the growing stem tip surrounded by young leaves or flowers or both and frequently enclosed by bud scales.

CODE	Site Name	Site Definition/Notes
BDW	Body wall	Consists of the layers of tissue, including skin, connective tissue, and hypaxial muscle, which surround and contain the internal structures of the body
BI	Bile	An alkaline fluid secreted by the liver and delivered to the duodenum to aid in the emulsification, digestion, and absorption of fats.
BDT	Bile duct	A duct that carries bile from the liver and gallbladder to the duodenum (first part of the small intestine). (http://cancerweb.ncl.ac.uk)
BIL	Bill	
BIT	Biliary tract	The biliary tract is a system of ducts that transports bile out of the liver into the small intestine (http://arbl.cvmbs.colostate.edu/hbooks/pathphys/digestion/liver/anatomy.html)
BK	Beak	A prominent terminal projection.
BL	Blood	A fluid connective tissue consisting of the plasma and cells that circulate in the blood vessels.
BLC	Blood cells	An erythrocyte (red blood cell) or leukocyte (white blood cell)
BM	Bone Marrow	A vascular modified connective tissue occurring in the long bones and certain flat bones of vertebrates.
BMC	Bone marrow cells	Cells found in the bone marrow
BMP	Bone marrow plasma	Plasma from the bone marrow.
BO	Bone	One of the parts constituting a vertebrate skeleton.
BOD	Body use WO	
BOL	Bolls	A pod or capsule, as of cotton and flax.
BR	Brain	The portion of the vertebrate central nervous system enclosed in the skull.
BRN	Branches	
BRS	Brain stem	
BT	Breast	
BU	Bursa	A simple sac or cavity with smooth walls containing a clear, slightly sickly fluid and interposed between two moving surfaces of the body to reduce friction.
BV	Blood Vessel	A tubular channel for blood transport.

CODE	Site Name	Site Definition/Notes
BW	Bee's Wax	Yellow to grayish-brown solid wax obtained from bee honeycombs by boiling and straining..
BY	Byssus	
C		
CA	Cartilage	A specialized connective tissue which is bluish, translucent, and hard but yielding.
CAE	Caecum	The blind end of a cavity, duct, or tube, especially the sac at the beginning of the large intestine.
CAN	Canopy	The uppermost spreading branchy layer of a forest.
CAP	Cap, Mushroom	The convex, concave, or flattened spore-bearing structure of some basidiomycetes that is attached superiorly to the stem and typically is expanded with gills or pores on the underside -- called also pileus.
CB	Cob	1 : the axis on which the kernels of Indian corn are arranged. 2 : an ear of Indian corn .
CBC	Cerebral cortex	The outer portion of the brain, consisting of layers of nerve cells and the pathways that connect them. The cerebral cortex is the part of the brain in which thought processes take place. (http://cancerweb.ncl.ac.uk)
CBH	Cerebral hemisphere	The two halves of the cerebrum, the largest part of the brain.
CBM	Cerebrum	An enlarged anterior or upper part of the brain; especially : the expanded anterior portion of the brain that in higher mammals overlies the rest of the brain, consists of cerebral hemispheres and connecting structures, and is considered to be the seat of conscious mental processes
CC	Cocoon	A protective case formed by the larvae of many insects, in which they pass the pupa stage.
CCM	Cecum	the blind pouch at the beginning of the large intestine into which the ileum opens from one side and which is continuous with the colon (www.m-w.com)
CDB	Caudal Bone	
CDV	Caudal vertebrae	The vertebrae that form the skeleton of the tail. (http://cancerweb.ncl.ac.uk)
CE	Coelomic fluid	
CEL	Cell	The microscopic functional and structural unit of all living organisms.

CODE	Site Name	Site Definition/Notes
CG	Cloacal gland	Any of the sweat glands in the cloaca of lower invertebrates, as snakes or amphibians.
CGG	Coagulating gland	Also known as the dorsal prostate, responsible for formation of a copulatory vaginal plug - preventing backflow of deposited semen (http://www.uwyo.edu/wjm/repro/maleanat.htm)
CRG	Cerebral ganglion	
CH	Spinal Cord,	The cordlike posterior portion of the central nervous system contained within the spinal canal of the vertebral column of all vertebrates.
CHP	Choroid plexus	Organ found within the ventricles of the brain and in the subarachnoid space around the brain and spinal cord that produces cerebrospinal fluid (http://www.ets.uidaho.edu/med532/choroid.htm)
CIL	Cilia	Relatively short, centriole-based, hairlike processes on certain anatomical cells and motile organisms.
CL	Claw	
CLM	Coelomocytes	A corpuscle, including amebocytes and eleocytes, in the coelom of certain animals, especially annelids.
CLN	Colon	The part of the large intestine that extends from the cecum to the rectum
CLT	Clitoris, Clitoral gland	a small erectile organ at the anterior or ventral part of the vulva homologous to the penis Webster's
CLV	Calvarium	the portion of the skull including the braincase and excluding the lower jaw and facial portion
CM	Crown to Rump	
CMB	Comb	a fleshy crest on the head of the domestic fowl and other gallinaceous birds Webster's
CN	Cotyledon	The first leaf of the embryo of seed plants.
CO	Collagen	A fibrous protein found in all multicellular animals, especially in connective tissue.
COL	Coleoptile	The first leaf of a monocotyledon seedling.
COR	Corm	A short, erect, fleshy underground stem, usually broader than high and covered with membrane scales.

CODE	Site Name	Site Definition/Notes
COS	Corpuscles of Stannius	These are islands of eosinophilic granular cells located in paired organs on the ventral surface of the kidney. This organ secretes a protein called hypocalcin (teleocalcin) which acts with calcitonin to regulate calcium metabolism. (http://www.afip.org/vetpath/POLA/POLA96/fish.txt)
CP	Capat	
CPS	Carpus	The joint, or the region of the joint, between the hand and the arm. The wrist.
CPT	Chloroplast	The photosynthetic organelle of higher plants.
CR	Crop	1) A plant or animal grown for it commercial value. 2) A distensible saccular diverticulum near the lower end of the esophagus of birds which serves to hold and soften food before passage into the stomach.
CRB	Cerebellum	Part of the vertebrate hindbrain, concerned primarily with somatic motor function, the control of muscle tone and the maintenance of balance.
CRI	Cervical rib	A rib which arises from the seventh cervical vertebrae (above the normal first rib). Occurs in only about 0.5% of people. May cause nerve and artery problems. (Gray's)
CRM	Cerebrum	The portion of the brain (frontal lobes) where thought and higher function reside.
CRP	Carapace	A dorsolateral, chitinous case covering the cephalothorax of many arthropods.
CRR	Cerebellar region	
CS	Chromosome	Any of the complex, threadlike structures seen in animal and plant nuclei during kariokinesis which carry the linearly arranged genetic material.
CSF	Cerebrospinal fluid	a clear liquid which is very similar to the liquid portion of blood(plasma) and contains various salts and products such as sodium, calcium, bicarbonate, chloride, magnesium and glucose. The purpose of the CSF is as a medium for the transport of the chemicals to and from the brain, and also to provide buoyancy and protection for the brain.
CST	Cisternae	Membrane bounded saccules of the smooth and rough endoplasmic reticulum and Golgi apparatus.
CT	Cephalothorax	the body division comprising the united head and thorax of arachnids and higher crustaceans
CTE	Ctenidium	The comb or featherlike respiratory apparatus of certain mollusks or a row of spines on the head or thorax of some fleas (MHSD)

CODE	Site Name	Site Definition/Notes
CU	Culture Cells	
CUT	Cuticle	A layer of more or less solid substance which covers the free surface of an epithelial cell.
CV	Caudal Vertebra	Any of the small bones of the vertebral column that support the tail in vertebrates.
CVV	Cervical vertebrae	The seven segments of the vertebral column located in the neck. Synonym: vertebrae cervicales (http://cancerweb.ncl.ac.uk)
CVM	Calvarium	One of the bones that makes up the vault of the skull (in humans these are the frontal, 2 parietals, occipital and 2 temporals). (Gray's)
CVX	Cervix	the narrow outer end of the uterus
CX	Caudex	The main axis of a plant, including stem and roots.
CY	Cytosol	The fluid portion of the cytoplasm, that is, the cytoplasm exclusive of organelles and membranes.
CYT	Cytoplasm	The organized complex of inorganic and organic substances external to the nuclear membrane of a cell and including the cytosol and membrane-bound organelles (as mitochondria or chloroplasts)
D		
DG	Digestive Gland	Any structure that secretes digestive enzymes.
DN	Diencephalon	In vertebrate CNS the most rostral part of the brainstem, consisting of the thalamus, hypothalamus, subthalamus and epithalamus. It is a key relay zone for transmitting information about sensation and movement and also contains (in the hypothalamus) important control mechanisms for homeostatic integration.
DO	Duodenum	
DT	Digestive Tract	The alimentary canal.
E		
EA	Ear (Corn or Rice)	
EAL	Ear leaf (Corn)	
EC	Excreta	Excretion products; waste materials excreted by the body.
ED	Endometrium	The tissue lining the uterus, it is sloughed off during the woman's menstrual period, and afterward grows back and slowly gets thicker and thicker until the next period. (cancerweb.ncl.ac.uk)

CODE	Site Name	Site Definition/Notes
EG	Egg	Ova
EL	Elytrom	
EM	Embryo	1) In animals, those derivatives of the fertilized ovum that eventually become the offspring during their period of most rapid development. 2) In plants, the element of the seed that develops into a new individual.
EMS	Embryonic shoot cells	
EN	Entrails	
EO	Endothelium	A layer of epithelium that lines the heart, blood vessels (ENDOTHELIUM, VASCULAR), lymph vessels (ENDOTHELIUM, LYMPHATIC), and the serous cavities of the body.
EP	Endoplasmic Reticulum	A vacuolar system of the cytoplasm in differentiated cells that functions in protein synthesis and sequestration.
EPD	Epididymis	A system of ductules emerging posteriorly from the testis that holds sperm during maturation and that forms a tangled mass before uniting into a single coiled duct which is continuous with the vas deferens
ER	Erythrocyte	Red blood cell.
ES	Esophagus	The tubular portion of the alimentary canal interposed between the pharynx and the stomach.
ET	Edible Tissue	
EU	Egg Cuticle	
EV	Exuviae	
EX	Exoskeleton	The external supportive covering of certain invertebrates, such as arthropods.
EY	Eye	
EYS	Eyestalk	One of the moveable peduncles bearing an eye at the tip in a decapod crustacean (Merriam-Webster)
EZ	Enzyme	Any of a group of catalytic proteins that are produced by living cells and that mediate and promote the chemical processes of life without themselves being altered or destroyed.
F		
F1	F1 Generation	the immediate offspring of a parent generation

CODE	Site Name	Site Definition/Notes
FAC	Face	The part of the head in which the eyes, cheeks, nose, and mouth are situated. (Gray's)
FB	Frontal Bone	Of or pertaining to the forehead or the anterior part of the roof of the brain case; as, the frontal bones.
FBR	Forebrain	The anterior of the three primary divisions of the developing vertebrate brain or the corresponding part of the adult brain that includes especially the cerebral hemispheres, the thalamus, and the hypothalamus and that especially in higher vertebrates is the main control center for sensory and associative information processing, visceral functions, and voluntary motor functions -- called also prosencephalon Webster's
FC	Feces	The waste material eliminated by the gastrointestinal tract.
FD	Frond	The leaf of a palm or fern.
FE	Feathers	
FG	Foregut	The anterior part of the alimentary canal of a vertebrate embryo that develops into the pharynx, esophagus, stomach, and extreme anterior part of the intestine
FI	Fin	A paddle-shape appendage on fish and other aquatic animals that is used for propulsion, balance, and guidance.
FIB	Fibula	A long bone in the lower leg that is adjacent to the tibia. The fibula supports approximately 1/6th of the body weight and produces the lateral (outer) prominence of the ankle. (http://cancerweb.ncl.ac.uk/cgi-bin/omd?fibula)
FL	Fillet	A boneless slice of meat or fish.
FLB	Flower Bud	
FLW	Flower/ Inflorescence	
FM	Femur	The proximal bone of the hind or lower limb in vertebrates.
FMD	Femur diaphysis	The shaft of the femur. (Gray's)
FMM	Femur metaphysis	A conical section of the femur between the epiphysis (area where growth occurs) and diaphysis (the shaft of the bone). (Gray's)
FO	Foot	
FOD	Fodder	
FOL	Foliage	The aggregate of leaves of one or more plants. (MW on-line)
FOR	Forage	A vegetable food for domestic animals.

CODE	Site Name	Site Definition/Notes
FP	Fatpad	
FR	Fruit	A fully matured plant ovary with or without other floral or shoot parts united with it at maturity.
FRL	Forelimb	A front limb of a quadruped. (http://cancerweb.ncl.ac.uk)
FX	Frontal cortex	Cortex of the frontal lobe of the cerebral hemisphere, originally, the entire cortical expanse anterior to the central sulcus, including the agranular motor and premotor cortex (Brodmann's areas 4 and 6), the dysgranular cortex (area 8), and the granular frontal (prefrontal) cortex anterior to the latter, now more often refers to the granular frontal (prefrontal) cortex.
G		
GB	Gall Bladder	A hollow, muscular organ in vertebrates which receives dilute bile from the liver, concentrates it, and discharges it into the duodenum.
GF	Green forage	
GG	Green Gland	(antennal gland) An excretory organ in the cephalon of adult crustaceans
GI	Gills	The respiratory organ of water-breathing animals. (Also branchia)
GC	Gland Complex	
GL	Ganglion	A mass of nerve tissue containing nerve cells external to the brain or spinal cord.
GMT	Germ tube	
GNP	Genital papillae	Tactile or sensory organs located near genitalia as raised bumps or nipples on a tissue surface
GNT	Gnathopod	A gnathopodite or maxilliped which is any leglike appendage of a crustacean, when modified wholly, or in part, to serve as a jaw, especially. (cancerweb.ncl.ac.uk)
GO	Gonads	A primary sex gland; an ovary or a testis.
GOL	Golgi Apparatus	A cellular organelle that is part of the cytoplasmic membrane system; it is composed of regions of stacked cisternae and it functions in secretory processes.
GP	Gills+Palps	
GPD	Gonopodium	the pelvic fins of male fish that have been converted into genital organs. (http://www.exotictropicals.com/encyclo/information/aquarium_glossary.htm)

CODE	Site Name	Site Definition/Notes
GR	Grain	
GS	Germinated seed	
GT	Gastrointestinal Tract	The stomach and intestine.
GU	Gut	The intestine. The embryonic, digestive tube.
GZ	Gizzard	The muscular portion of the stomach of most birds where food is ground with the aid of ingested pebbles.
H		
HA	Hair	A threadlike outgrowth of the epidermis of animals.
HAP	Haptonema	Filament extending between the paired flagella of certain unicellular algae (haptophytes). Supported by 6 or 7 microtubules (not in an axoneme like array) and apparently used for capturing prey in a manner analogous to the axopodia of heliozoa.
HAY	Hay	Hay
HC	Hypocotyl callus cells	
HD	Head	
HDG	Hindgut	The posterior part of the alimentary canal Webster's
HE	Heart	
HIP	Hippocampus	A curved elongated ridge that extends over the floor of the descending horn of each lateral ventricle of the brain and consists of gray matter covered on the ventricular surface with white matter Webster's
HK	Heart and Kidneys	Sample consists of heart and kidney tissue.
HKG	Husk and grain	
HL	Hemolymph	The circulating fluid of the open circulatory systems of many invertebrates.
HLB	Hindlimb	Either of two extremities of four-footed non-primate land animals. It usually consists of a femur, tibia and fibula, tarsals, metatarsals, and toes. (http://cancerweb.ncl.ac.uk)
HM	Humerus	The proximal bone of the forelimb in vertebrates.
HMC	Hemocyte	A cellular element of blood, especially in invertebrates.
HO	Honey	The sweet, viscous secretion composed principally of levulose and dextrose that is deposited in the honeycomb by the honeybee.

CODE	Site Name	Site Definition/Notes
HOD	Hyoid	Of or pertaining to the bony or cartilaginous arch which supports the tongue (Gray's).
HP	Hepatopancreas	A gland in crustaceans and certain other invertebrates that combines the digestive functions of the liver and pancreas of vertebrates.
HSK	Husk	
HTC	Heterocyst	Clear, thick-walled cell occurring at intervals along the filament of certain blue-green algae.
HTG	Hatching gland	A transversely oriented set of cells located deep to the enveloping layer on the pericardial membrane, especially during the pharyngula period because of the brightly refractile cytoplasmic granules containing hatching enzymes in the cells. (http://www.purehrottle.com/briancoad/Dictionary/H.html)
HY	Hypothalamus	The floor of the third brain ventricle; site of production of several substances that act on the adenohypophysis.
HYA	Hypha	Also known as Hyphae or Hyphal. One of the threads that make up the mycelium of a fungus, increase by apical growth, and are coenocytic or transversely septate Webster's
HYD	Hypodermis	1. The outermost cell layer of the cortex of plants, aka exodermis. 2. The layer of cells that underlies and secretes the cuticle in arthropods and other invertebrates.
HYP	Hypocotyl	The portion of the embryonic plant axis below the cotyledon.
I		
IB	Interparietal Bone	Between the parietal bones or cartilages; as, the interparietal suture.
IE	Ileum	The last portion of the small intestine that communicates with the large intestine.
IL	Ilium	The dorsal, upper, and largest one of the three bones composing either lateral half of the pelvis.
IN	Intestinal Tract	
INC	Inclusions	The residual elements of the cytoplasm that are metabolic products of the cell e.g. pigment granules or crystals.
IR	Interrenal gland	
IT	Internode	The interval between two nodes, as on a stem or along a nerve fiber.
J		

CODE	Site Name	Site Definition/Notes
JA	Jaw	Either of two bones forming the skeleton of the mouth of vertebrates. Also known as mandible.
JE	Jejunum	The section of the small intestine that comprises the first two fifths beyond the duodenum and that is larger, thicker-walled, and more vascular and has more circular folds than the ileum Webster's
JV	Juvenile	Physiologically immature or undeveloped lifestage.
K		
KI	Kidney	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KIL	Kidney, left	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KIR	Kidney, right	Either of a pair of organs involved with the elimination of water and waste products from the body of vertebrates.
KR	Kernal	A whole grain or seed of a cereal plant, such as corn or barley.
L		
LAM	Laminae	the expanded part of a foliage leaf
LC	Leaf chloroplast	A type of cell plastid occurring in the green parts of plants, containing chlorophyll pigments, and functioning in photosynthesis and protein synthesis.
LD	Lipid, Fat	One of a class of compounds which contain long-chain aliphatic hydrocarbons and their derivatives; includes waxes, fats, and derived compounds.
LE	Leaf /Needle	
LEI	Leaf Index	
LEN	Lens	
LEO	Leaf, Old	
LEU	Leukocytes	Also known as white blood cells. White corpuscles in the blood. They are spherical, colorless and nucleated masses involved with host defenses. (cancerweb.ncl.ac.uk)
LEY	Leaf, Young	
LG	Leg	

CODE	Site Name	Site Definition/Notes
LI	Liver	A large vascular gland in the body of vertebrates consisting of a continuous parenchymal mass covered by a capsule; secretes bile, manufactures certain blood proteins and enzymes, and removes toxins from the systemic circulation.
LIM	Liver microsomes	In the hepatocyte, any of the vesicular fragments of endoplasmic reticulum formed after disruption and centrifugation of cells. (Gray's)
LIN	Large intestine	the more terminal division of the vertebrate intestine that is wider and shorter than the small intestine, typically divided into cecum, colon, and rectum, and concerned especially with the resorption of water and the formation of feces
LIP	Lip	Either of the two fleshy folds which surround the orifice of the month. (Websters Dictionary)
LIT	Litters	Offspring
LM	Limb	1) An extremity or appendage used for locomotion or prehension. 2) A large primary tree branch
LMP	Lymphocyte	White cell of the blood that are derived from stem cells of the lymphoid series. (http://cancerweb.ncl.ac.uk)
LMV	Lumbar vertebrae	The vertebrae, usually five in number, located in the lumbar region of the back. Synonym: vertebrae lumbales. (http://cancerweb.ncl.ac.uk)
LN	Lymph node	Small, bean-shaped organs located throughout the lymphatic system. The lymph nodes store special cells that can trap cancer cells or bacteria that are traveling through the body in lymph. Also called lymph glands.
LP	Labial Palps	1) Either of a pair of fleshy appendages on either side of the mouth of certain bivalve mollusks. 2) A jointed appendage attached to the labium of certain insects.
LU	Lungs	Either of the paired air-filled sacs which function as organs of respiration.
LV	Left ventricle	The muscular chamber of the heart which accepts blood from the left atrium and ejects it into the aorta to the systemic circulation. (http://www.graylab.ac.uk/cgi-bin/omd?left+ventricle)
LY	Lysosome	A specialized cell organelle surrounded by a single membrane and containing a mixture of hydrolytic (digestive) enzymes.
M		

CODE	Site Name	Site Definition/Notes
MA	Mantle	An enveloping layer, as the external body wall lining the shell of many invertebrates, or the external meristematic layers in a stem apex.
MB	Muscle+Bone	
MBR	Midbrain	The part of the brain above the pons and below the thalamus, it is the uppermost part of the brainstem, and is involved in basic, unconscious body function. (Gray's)
MC	Microsome	A fragment of the endoplasmic reticulum. A minute granule of protoplasm.
ME	Meristem (apical or axillary)	Meristem - Formative plant tissue composed of undifferentiated cells capable of dividing and giving rise to other meristemic cells as well as specialized cell types.
MES	Mesentery	The membranes, or one of the membranes (consisting of a fold of the peritoneum and inclosed tissues), which connect the intestines and their appendages with the dorsal wall of the abdominal cavity. The mesentery proper is connected with the jejunum and ileum, the other mesenteries being called mesocum, mesocolon, mesorectum, etc. (http://cancerweb.ncl.ac.uk)
MI	Midgut and Midgut Gland	The middle portion of the digestive tube in vertebrate embryos.
MIT	Mitochondria	Minute cytoplasmic organelles in the form of spherical granules, short rods, or long filaments found in almost all living cells.
MK	Milk, lactating females	
MM	Mammary Tissue	
MO	Mucous	A viscid fluid secreted by mucus glands
MOB	Medulla oblongata	The lowest subdivision of the brainstem, immediately adjacent to the spinal cord. Houses important cardiac and respiratory regulatory centres.
MOM	Mother cells, pollen	
MR	Membrane	A thin layer of tissue surrounding a part of the body, separating adjacent cavities, lining cavities, or connecting adjacent structures.
MRC	Motor cortex	Area of the frontal lobe concerned with primary motor control. It lies anterior to the central sulcus. (http://cancerweb.ncl.ac.uk/cgi-bin/omd?motor+cortex)
MS	Mesenteric Lymph Node	

CODE	Site Name	Site Definition/Notes
MSI	Mucosa of the Small Intestines	The mucous coat of the small intestine.
MSC	Mesencephalon	The middle segment of the brain; the midbrain.
MT	Multiple Tissue/ Organs	AQUIRE code. Used when multiple sites are coded for one record. The individual sites are reported as a REMARK. This code will be changed to MUL at a later date.
MTC	Metacarpus	The part of the hand or forefoot that contains the metacarpals.
MTM	Mentum	The front median plate of the labium in insects (cancerweb.ncl.ac.uk)
MU	Muscle	A tissue composed of cells containing contractile fibers; three types are smooth, cardiac, and skeletal.
MUL	Multiple Sites	
MV	Microvilli	One of the filiform processes that form a brush border on the surfaces of certain specialized cells, such as intestinal epithelium.
MYC	Mycellium	Mass of interwoven filamentous hyphae that forms especially the vegetative portion of the thallus of a fungus.
MYM	Myometrium	Uterine smooth muscle.(cancerweb.ncl.ac.uk)
N		
NAC	Nucleus accumbens	The largest neuronal nucleus in the septal region of the diencephalon in the brain. (Gray's)
NB	Nasal Bone	Either of two small elongated rectangular bones that together form the bridge of the nose.
NC	Nerve Cord	a hollow tube that runs beneath the dorsal surface of the animal above the notochord (the principle nerve cord in the invertebrates, by contrast, is almost always located near the ventral surface
ND	Nodule, root	A bulbous enlargement found on roots of legumes and certain other plants, whose formation is stimulated by symbiotic, nitrogen-fixing bacteria that colonize the roots.
NE	Nervous Tissue	The nerve cells and neuroglia of the nervous system.
NG	Nasal Gland	
NI	Nipple	The protuberance through which milk is drawn from the breast or mamma; the mammilla; a teat; a pap.
NK	Neck	A constricted portion, such as the part connecting the head and trunk of the body.

CODE	Site Name	Site Definition/Notes
NL	Needle	A slender-pointed leaf, as of the firs and other evergreens.
NR	Not Reported	
NU	Nuclei	
NVL	Navel	A mark or depression in the middle of the abdomen; the umbilicus. (Gray's)
NY	Nymph	Any of various immature insects; especially : a larva of an insect with incomplete metamorphosis that differs from the adult especially in size and in its incompletely developed wings and genitalia.
O		
OC	Oocyte	An egg before the completion of maturation
OD	Oviduct	A tube that serves to conduct ova from the ovary to the exterior or to an intermediate organ such as the uterus (Fallopian tube)
OF	Orifice	an opening (as a vent, mouth, or hole) through which something may pass Webster's
OG	Organ	A differentiated structure of an organism composed of various cells or tissues and adapted for a specific function.
OL	Olfactory	Pertaining to olfaction, or the sense of smell.
OPR	Operculum	
OR	Organelle	A specialized subcellular structure, such as mitochondrion, having a special function.
OS	Osphradium	in Littorina; an organ capable of sensing chemical changes in the environment
OTO	Otoliths	A calcareous concretion on the end of a sensory hair cell in the vertebrate ear and in some invertebrates.
OV	Ovaries	A glandular organ that produces hormones and give rise to ova in female vertebrates.
P		
PA	Palps	Any of various sensory, usually fleshy appendages near the oral aperture of certain invertebrates.
PAN	Panicle	A branched or compound raceme in which the secondary branches are often racemose as well.
PB	Pseudobranch	
PBD	Projectile body	A body projected through cell membranes.

CODE	Site Name	Site Definition/Notes
PC	Pyloric ceca	1) One of the tubular pouches that open into the vertriculus of an insect. 2) One of the paired tubes having lateral glandular diverticula in each ray of a starfish. 3) One of the tubular pouches that open from the pyloric end of the stomach into the alimentary canal of most fishes.
PD	Pod	
PE	Penis	The male organ of copulation in vertebrates. Also known as phallus.
PEP	Pecten epipharyngis	
PES	Petiole and Stem	Both the a slender stem that supports the blade of a foliage leaf and the main trunk of a plant or a primary plant axis that develops buds and shoots instead of roots
PF	Pseudofeces	
PG	Prostate Gland	A gland in the male which surrounds the neck of the bladder and the urethra. The prostate contributes to the seminal fluid.
PGL	Preening gland	A relatively large, compact bilobed secretory organ located at the base of the tail (uropygium) of most birds having a keeled sternum. Also known as oil gland or uropygial gland. (McGraw-Hill)
PHG	Pheromone gland	A gland that secretes a chemical stimulant/attractant that is released into the surrounding environment, either air or water.
PHL	Phalanges	The finger bones (http://cancerweb.ncl.ac.uk/cgi-bin/omd?phalanges)
PI	Pituitary Gland	(hypophysis) An epithelial body located at the base of the brain. Consists of two lobes. Secretes hormones.
PL	Plasma	The fluid portion of blood or lymph.
PLA	Platelet	A discoid cell (3m diameter) found in large numbers in blood, important for blood coagulation and for haemostasis by repairing breaches (small breaks) in the walls of blood vessels. (cancerweb.ncl.ac.uk)

CODE	Site Name	Site Definition/Notes
PLC	Placenta	1) A vascular organ that unites the fetus to the wall of the uterus. 2) A plant surface bearing a sporangium.
PLL	Pellicle	The outer membrane of protozoans.
PLN	Popliteal nodes	Two groups of nodes located in the popliteal fossa: the superficial popliteal lymph nodes, located around the termination of the small saphenous vein, that drain the skin of the back of the leg and lateral side of the foot; and the deep popliteal lymph nodes, located around the popliteal vessels, that drain the superficial group, the deep structures of the leg, and the knee joint. Also, Popliteal lymph node, nodi lymphatici popliteales
PLP	Pulp	the soft, succulent part of a fruit usually composed of mesocarp (MW)
PLT	Palate	The roof of the mouth. (http://cancerweb.ncl.ac.uk)
PLV	Pelvis	The pelvis is a basin shaped cavity bordered by the pelvic girdle and sacrum, containing and protecting the bladder, rectum and reproductive organs. (http://cancerweb.ncl.ac.uk)
PM	Pons + Medulla	A rounded eminence off the ventral surface of the brainstem (pons) and the lowest subdivision of the brainstem, immediately adjacent to the spinal cord (medulla). (Gray's)
PO	Pollen, pollen grain	
PPG	Preputial gland	A small scent gland in the human male which secretes the smegma. Also known as Tyson's gland. (McGraw-Hill)
PR	Proventriculus	1) A sac anterior to the gizzard in earthworms. 2) The true stomach of a bird, usually separated from the gizzard by a constriction.
PRF	Particulate fraction	
PRG	Progeny	Offspring, descendants
PRT	Peritoneum	also peritoneum. The smooth serous membrane which lines the cavity of the abdomen, or the whole body cavity when there is no diaphragm, and, turning back, surrounds the viscera, forming a closed, or nearly closed sac (Grey on-line medical Dictionary)

CODE	Site Name	Site Definition/Notes
PS	Pancreas	A composite gland in most vertebrates that produces and secretes digestive enzymes, as well as at least two hormones, insulin and glucagon.
POS	Pod + Seed	
PT	Petioles	The stem which supports the blade of a leaf.
PTB	Parietal Bone	The side bone of the skull.
PTG	Parotid gland	A salivary gland situated in front of and below the ear. (Gray's)
PTU	Plant, Unspecified	
PU	Pollen tube	The tube produced by the wall of a pollen grain which enters the embryo sac and provides a passage through which the male nuclei reach the female nuclei.
PX	Pharynx	A chamber at the oral end of the vertebrate alimentary canal, leading to the esophagus.
PYR	Pyrenoid	A Small body found within some chloroplasts, that may contain protein. In green algae may be involved in starch synthesis.
R		
RA	Radius	One of two bones which constitute the forearm. The largest portion of the radius is at the wrist joint where it articulates with the carpal bones of the hand. (http://cancerweb.ncl.ac.uk)
RAC	Rachis	Elongated axis of an inflorescence.
RAD	Radius, distal	One of two bones which constitute the forearm situated away from the point of attachment or origin. The largest portion of the radius is at the wrist joint where it articulates with the carpal bones of the hand. (http://cancerweb.ncl.ac.uk)
RB	Rib	One of the curved bones attached to the vertebral column and supporting the lateral walls of the thorax. (http://cancerweb.ncl.ac.uk)
RBC	Erythrocytes	A type of blood cell that contains a nucleus in all vertebrates but humans and that has hemoglobin in the cytoplasm also known as red blood cell or corpuscle.
RC	Rectum	The portion of the large intestine between the sigmoid flexure and the anus.
RD	Radicle	
RG	Rectal gland	In Sharks: rectal gland is a highly specialized organ whose only function is to pump salt

CODE	Site Name	Site Definition/Notes
RH	Rhizome	An underground horizontal stem, often thickened and tuber-shaped, and processing buds, nodes, and scale-like leaves.
RL	Root, Lateral	
RLP	Root, Primary lateral	
RLS	Root, Secondary lateral	
RM	Retractor Muscle	A muscle that draws a limb or other body part toward the body.
RO	Root	The absorbing and anchoring organ of a vascular plant; it bears neither leaves nor flowers and is usually subterranean.
ROC	Root Cortex	
ROE	Root, epidermis	
ROI	Root, Inner cortex	
ROO	Root, Outer cortex	
ROS	Root, Stele	The arrangement of vascular bundles in roots
RP	Root, Primary	
RPP	Renal papilla	The apex of a renal pyramid that projects into a minor calyx; some 10 to 25 openings of papillary ducts occur on its tip, forming the area cribrosa. (Gray's)
RR	Residual, Remnant, Carcass	
RS	Root + Stem	
RT	Reproductive Tissue	
RTC	Root tip cells	
RTP	Root tips	Terminal end of a root.
RU	Radius-Ulna	
RV	Right Ventricle	The muscular chamber of the heart which accepts blood from the right atrium and pumps it through the pulmonary artery into the lungs.
RZ	Root + Rhizome	
S		
SA	Salt Gland	A compound tubular gland, located around the eyes and nasal passages in certain marine turtles, snakes, and birds, which copiously secretes a watery fluid containing a high percentage of salt.

CODE	Site Name	Site Definition/Notes
SAP	Sap	The fluid part of a plant; specifically: a watery solution that circulates through
SB	Shell, Membrane	
SB2	Stem/Stalk, Lower Half	
SC	Scale	1) A flat calcified or cornified platelike structure on the skin of most fishes and of some tetrapods. 2) The bract of a catkin.
SCH	Starch	Storage carbohydrate of plants.
SCM	Scrotum	the external pouch that in most mammals contains the testes Webster's
SCP	Scapula	A large, flat, triangular bone that forms the posterior portion of the shoulder. It articulates with the clavicle (at the acromion process) and the humerus (at the glenoid). (http://cancerweb.ncl.ac.uk)
SCV	Sacral vertebrae	The segments of the vertebral column, usually five in number, that fuse to form the sacrum. Synonym: vertebrae sacrales. (http://cancerweb.ncl.ac.uk)
SD	Seed	A fertilized ovule containing an embryo which forms a new plant upon germination.
SDL	Seedling	A plant grown from a seed.
SDM	Subdermis	area below the skin
SE	Sensory Organs	
SEM	Semen	a viscid whitish fluid of the male reproductive tract consisting of spermatozoa suspended in secretions of accessory glands
SG	Shell Gland	1) An organ that secretes the embryonic shell in many mollusks. 2) A specialized structure attached to the oviduct in certain animals that secretes the egg-shell material.
SH	Stomach	The tubular or saccular organ of the vertebrate digestive system located between the esophagus and the intestine and adapted for temporary food storage and for the preliminary stages of food breakdown.
SHF	Stomach or rumen fluid	Fluid found in the stomach or rumen
SI	Siphon	1) A tubular element in various algae. 2) A tubular structure for intake or output of water in bivalves and other mollusks. 3) The sucking-type of proboscis in many arthropods.

CODE	Site Name	Site Definition/Notes
SIN	Small intestine	the part of the intestine that lies between the stomach and colon, consists of duodenum, jejunum, and ileum, secretes digestive enzymes, and is the chief site of the absorption of digested nutrients
SINM	Small intestine mucosa	A mucous membrane or tunica mucosa of the small intestine (Gray's)
SINS	Small intestine serosa	One of the delicate membranes of connective tissue which line the internal cavities of the small intestine. (Grays)
SK	Skin, Epidermis	The external covering of the vertebrate body, consisting of two layers, the outer epidermis and the inner dermis.
SKL	Skull	The bones and cartilages of the vertebrate head which forms the cranium and the face.
SKM	Skeletal Muscle	the striated muscle of vertebrates that is under voluntary control (http://cancerweb.ncl.ac.uk/cgi-bin/omd?skeletal+muscle)
SL	Shell, Eggshell	The hard covering of an egg.
SLK	Silk	The silky styles on an ear of corn.
SLV	Stem to Leaves	
SM	Sperm	A mature male germ cell. (Spermatozoa)
SMT	Spermatheca	A sac in the female for receiving and storing sperm in fertilization; found in many invertebrates and certain vertebrates. (Seminal receptacle)
SN	Skeleton	The hard framework of the animal body, especially the boney framework of the body of higher vertebrate animals.
SO	Shoot	The aerial portion of a plant, including stem, branches, and leaves. A new, immature growth on a plant.
SP	Spleen	A blood-forming lymphoid organ of the circulatory system, present in most vertebrates. (McGraw-Hill)
SPB	Sphenoid bone	an irregularly shaped bone in front of the occipital in the base of the skull of the higher vertebrates. It is composed of several foetal bones which become united the adult. (Gray's)
SPI	Spine, Backbone	An articulated series of vertebrae forming the axial skeleton of the trunk and the tail. Spinal column, vertebral column
SPK	Spikelet	The compound inflorescence of a grass consisting of one or several bracteate spikes.

CODE	Site Name	Site Definition/Notes
SPR	Sporophyte	An individual of the spore-bearing generation in plants exhibiting alteration of
SPT	Spermatid	The haploid product of the second meiotic division in spermatogenesis. Differentiate into mature spermatozoa. (Gray's)
SQ	Shell (Aquatic)	A hard calcareous, outer covering on an animal body, as of bivalves and turtles.
SR	Serum	The liquid portion that remains when blood clots spontaneously and the formed and clotting elements are removed by centrifugation; it differs from plasma by the absence of fibrinogen.
SRB	Strobilus (mega-, micro-, etc.)	1) Conelike structure made up of sporophyllus or spore-bearing leaves. 2) The cone membranes of the Pinophyta
SRC	Secretory Cell	A cell that secretes a fluid.
SS	Stem/Stalk	The organ of vascular plant that usually develops branches and bears leaves and flowers.
SSI	Serosa of the Small Intestines	Serous coat of the small intestine; the peritoneal covering of the external surface of the small intestine
SSC	Somatosensory center	Area of the brain that detects sensation relating to the body's superficial and deep parts
SSP	Stem plus Petioles	The stem and stock of the leaf that is attached to the stem.
ST	Soft Tissue	
STA	Setae	A slender, usually rigid bristle or hair. Also known as chaeta.
STB	Seminiferous tubules	Any of the tubercles of the testes which produce spermatozoa. (McGraw-Hill)
STE	Sternum or sternbrae	a compound ventral bone or cartilage of most vertebrates other than fishes that connects the ribs or the shoulder girdle or both and in humans consists of the manubrium, gladiolus, and xiphoid process -- called also breastbone (Webster's)
STG	Straw and grain	
STH	Straw and husk	
STL	Stolon	Horizontal branch from the base of a plant that produces new plants from buds at its tip or nodes.
STM	Striatum	The corpus striatum, a part of the brain (Websters Dictionary)

CODE	Site Name	Site Definition/Notes
STR	Straw	
STV	Stover mature cured stalks of grain with the ears removed that are used as feed for livestock (MW online)]	
SU	Stalk/Stem, Upper Half	
SV	Seminal Vesicle	A saclike, glandular diverticulum on each ductus deferens in male vertebrates; it is united with the excretory duct and serves for temporary storage of semen.
SVG	Salivary gland	Any of the saliva-secreting exocrine glands of the oral cavity. (Gray's)
SWB	Swim Bladder	A gas-filled cavity found in the body cavities of most bony fishes; has various functions in different fishes, acting as a float, a lung, a hearing aid, and a sound producing organ.
SX	Submaxillary Gland	(Submandibular gland) A large seromucous or mixed salivary gland located below the mandible on each side of the jaw.
T		
TA	Tail	1) The caudal fin of a fish or aquatic mammal. 2) The usually slender appendage that arises immediately above the anus in many vertebrates and contains the caudal vertebrae.
TB	Tibia	The larger of the two leg bones, articulating with the femur, fibula, and talus
TBC	Tubercles	A small knoblike prominence.
TCH	Trachea	The windpipe. A fibrocartilaginous tube lined with mucous membrane passing from the larynx to the bronchi. (http://cancerweb.ncl.ac.uk)
TEL	Testicle, left	The testicle located on the left side of the body
TER	Testicle, right	The testicle located on the right side of the body
TCV	Thoracic vertebrae	The segments of the vertebral column, usually twelve, which articulate with ribs to form part of the thoracic cage. Synonym: vertebrae thoracicae. (http://cancerweb.ncl.ac.uk)
TD	Transudate	A fluid that passes through the pores or interstices of a membrane.
TE	Testes	The male reproductive glands in vertebrates; after sexual maturity, the source of sperm and hormones

CODE	Site Name	Site Definition/Notes
TF	Tuber Flesh	Tuber = The enlarged end of a rhizome in which food accumulates, as is the potato.
TG	Thigh muscle	Thigh - The upper part of the leg, from the pelvis to the knee.
TH	Thorax	1) The chest; the cavity of the mammalian body between the neck and the diaphragm, containing the heart, lungs, and mediastinal structures. 2) The middle of three principal divisions of the body of certain classes of arthropods.
TI	Tissue	An aggregation of cells more or less similar morphologically and functionally.
TIL	Tillers	A shoot that develops from an axillary or adventitious bud at the base of a stem.
TK	Trunk	the main stem of a tree apart from limbs and roots or the human or animal body apart from the head and appendages Webster's
TLE	Trifoliolate Leaf/Leaves	A leaf consisting of three leaflets.
TLI	Thalli	Thallus = A plant body that is not differentiated into special tissue systems or organs and may vary from a single cell to a complex, branching multicellular structure.
TLM	Thalamus	Either of two large ovoid masses, consisting chiefly of gray substance, situated one on each side of and forming part of the lateral wall of the third ventricle. (Grey's on-line dictionary)
TLN	Telencephalon	the anterior subdivision of the embryonic forebrain or the corresponding part of the adult forebrain that includes the cerebral hemispheres and associated structures Webster's
TLS	Talus	the human tarsal bone that bears the weight of the body and that together with the tibia and fibula forms the ankle joint Webster's
TM	Tarsus-Metatarsus	
TMR	Tumor	An abnormal mass of tissue that results from excessive cell division that is uncontrolled and progressive, also called a neoplasm. Tumours perform no useful body function. They may be either benign (not cancerous) or malignant.
TN	Tentacles	Any of various elongate, flexible processes with tactile, prehensile, and sometimes other functions, and which are borne on the head or about the mouth of many animals.
TO	Tongue	A muscular organ located on the floor of the mouth of most vertebrates which may serve various functions, such as taking and swallowing food or tasting or as a tactile organ or sometimes as a prehensile organ.

CODE	Site Name	Site Definition/Notes
TOP	Tops (Plant)	
TOR	Torso	Portion of the body excluding the head and limbs; trunk
TP	Tuber Peeling	
TR	Tarsus	The instep of the foot consisting of the calcaneus, talus, cuboid, navicular, medial, intermediate, and lateral cuneiform bones.
TRD	Tear duct	also known as harderian or lachrymal gland, a gland on the inner side of the orbit of many animals which have a third eyelid, or nictitating membrane. (cancerweb.ncl.ac.uk)
TS	Thymus	A lymphoid organ in the neck or upper thorax of all vertebrates; it is prominent in early life and is essential for normal development of the circulating pool of lymphocytes.
TSC	Thymus cortex	The outer layer of an organ or other body structure, as distinguished from the internal substance, in this case of the Thymus. (Grays)
TSL	Tassel	The terminal male inflorescence of some plants and especially corn.
TSM	Thymus medulla	The inner portion of an organ, in this case of the thymus. (Grays)
TT	Tibiotarsus	Pertaining to the tibia and the tarsus. Tibia - shin bone Tarsus - The seven bones constituting the articulation between the foot and the leg.
TTH	Tooth, teeth	One of the bony structures supported by the jaws in mammals and by other bones in the mouth and pharynx in lower vertebrates serving principally for prehension and mastication.
TU	Tuber	Tuber = The enlarged end of a rhizome in which food accumulates, as is the potato.
TY	Thyroid	An endocrine gland found in all vertebrates that produces, stores, and secretes the thyroid hormones.
U		
UB	Urinary Bladder	A hollow organ which serves as a reservoir for urine.
UG	Uropygial Gland	A relatively large, compact, bilobed, secretory organ located at the base of the tail of most birds having a keeled sternum. Also known as oil gland.

CODE	Site Name	Site Definition/Notes
UL	Ulna	One of the bones that comprise the forearm. The largest aspect articulates with the humerus at the elbow joint and the smallest portion of the ulna articulates with the carpal bones in the wrist. (http://cancerweb.ncl.ac.uk)
ULE	Unifoliate (Primary) Leaf/Leaves	A single leaf.
UNT	Urinary tract	
UP	Urogenital papillae	Urogenital = pertaining to the urinary and genital apparatus. Papillae = A small nipple-like projection, elevation, or structure.
UR	Urine	The fluid excreted by the kidneys
URT	Ureter	The tube passing from each kidney to the bladder for the conveyance of urine. Its average length is 25 to 30 centimeters. (Gray's)
UT	Uterus	The organ of gestation in mammals which receives and retains the fertilized ovum, holds the fetus during development, and becomes the principal agent of its expulsion at term.
V		
VA	Vagina	The canal from the vulvar opening to the cervix uteri. (McGraw-Hill)
VAS	Vasculature	
VC	Visual center	Area of the brain that detects visual stimulus
VCL	Vacuole	a small cavity or space in the tissue of an organism containing air or fluid Webster's
VD	Vas Deferens	The portion of the excretory duct system of the testis which runs from the epididymal duct to the ejaculatory duct.
VE	Vertebra	One of the bones that make up the spine in vertebrates.
VG	Vegetative portion	WO - SD or FR
VI	Viscera	The organs within the cavities of the body of an organism
VL	Villi	villus = A fingerlike projection from the surface of a membrane.
VN	Vines	A plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground; also : the stem of such a plant

CODE	Site Name	Site Definition/Notes
VNT	Ventricle	A chamber of the heart which receives blood from a corresponding atrium and from which blood is forced into the arteries Webster's
VSC	Vesicle	A closed membrane shell, derived from membranes by a physiological process.
W		
WI	Wings	Any of the paired appendages serving organs of flight on many animals
WL	Wall, Body	
WM	White matter	Brain tissue composed of myelin-coated nerve cell fibers.
WO	Whole Organism	
Y		
YO	Yolk	The yellow spherical mass of food material that makes up the central portion of the egg of a bird or reptile.
YS	Yolk sac	a membranous sac that is attached to an embryo and encloses food yolk, that is continuous in most forms through the yolk stalk with the intestinal cavity of the embryo, that being abundantly supplied with blood vessels is throughout embryonic life and in some forms later the chief organ of nutrition, and that in placental mammals is nearly vestigial and functions chiefly prior to the elaboration of the placenta Webster's
Z		
ZP	Zona pellucida	Pellucid zone: a thick, transparent, noncellular layer or envelope of uniform thickness surrounding an oocyte; also called oolemma. Under a microscope it appears radially striated and is therefore also called zona radiata, zona striata or striated membrane

Appendix V. Common Keywords for Other Effects Text Field (AQUIRE only)

age efcts	Sediment
Alkalinity efcts	Sex efcts
Bacteria	Size efcts
Conductivity efcts	Temperature efcts
Critical Level	Toxicity Symptoms
Diet Study	Transport
Depuration	Uptake
D.O. efcts	
Effluent	
Elimination	
fate	
Field Study	
Food Chain Study	
Genotoxicity threshold	
Hardness efcts	
Humic Acid	
Hypoxia efcts	
Ind Taxon Result	
in vitro	
Kinetics	
Lethal Body Burden	
log LC50	
Metabolism	
metabolites	
Microtox	
Mixture	
nutrient study	
Oil	
Org_C efcts	
pH efcts	
Pre-Exposure Study	
QSAR	
Radiolabel	
Recovery	
Safe Conc (Safe Concentration)	
Salinity efcts	

Appendix W. Water Chemistry Units (AQUIRE only)

<u>Code</u>	<u>Definition</u>		
%	percent	ml N/100 HCl	milliliter Nitrogen per 100 Hydrochloric acid
% Sat	Percent saturation	mm	millimeters
C	Celsius	mm Hg	millimeters Mercury
kDa	kilo Daltons	mmhos	milli ohms
F	Fahrenheit	mmhos/cm	milliohms per centimeter
K	Kelvin	mmol/l	millimoles per liter
N	Normal	mOsm	milliosmoles
NR	Not reported	mS/cm	milli Siemens per centimeter
PSU	practical salinity units	mV	millivolts
cm	centimeters	ohms	ohms
dH	degrees German hardness	ohm/cm	ohm per centimeter
ft	feet	ppm	parts per million
g CaCO ₃	grams Calcium carbonate	ppm CaCO ₃	parts per million CaCO ₃
g/kg	grams per kilograms	<u>Code</u>	<u>Definition</u>
g/L	grams per liter	ppm MO	parts per million Methyl Orange
HCO ₃	Hydrogen carbonate	ppt	parts per thousand
in	inches	pptr	parts per trillion
m	meters	S	Siemens
M NaCl	Molar Sodium Chloride	ug/L	micrograms per liter
mM	millimolar	uS	micro Siemens
mS	milli Siemens	uS/cm	microSiemens per centimeter
mS/m	milli Siemens per meter	ueq/L	micro equivalents per liter
mg/dm ³	milligram per cubic decimeter	uM	micromolar
meq	milli equivalents	umhos	micro ohms
meq/L	milli equivalents per liter	umhos/cm	micro ohms per centimeter
mg/L	milligrams per liter	umhos/cm ²	micro ohms per square centimeter
mg/L C	milligrams per liter Carbon	umol/L	micromoles per liter
mg/L CaCO ₃	milligrams / liter Calcium carbonate		
mg/L EDTA	milligrams per liter EDTA		
mg/L FA	milligrams per liter fulvic acid		
mg/L HA	milligrams per liter Humic acid		
mg/L Mg	milligrams per liter Magnesium		
mg/L MO	milligrams per liter Methyl Orange		
ml/L	milliter per liter		

Appendix X. Habitat Codes and Common Descriptors (AQUIRE only)

Code	Habitat	Definition	Descriptors
E	Estuarine	"deepwater tidal habitats... with sporadic access to open ocean...ocean water... is diluted by freshwater..."; Salinity range between 0.5-30ppt	Bay Marsh, brackish, salt, tidal Estuary Swamp
L	Lacustrine	"permanently flooded lakes and reservoirs, intermittent lakes and tidal lakes with salinity ≤ 0.5 ppt"; total area exceeds 8 ha (8 acres) and 2 m water depth.	Bay Cove Impoundment Lake
M	Marine	"open ocean overlying the continental shelf and it associated.... coastline; includes shallow coastal indentations or bays; salinity [typically] exceed ppt"	Bay Gulf Open Ocean Reef Seaweed bed
P	Palustrine	"small, shallow, permanent or intermittent fresh water bodies"; total area ≤ 8 ha (20 acres) and ≤ 2 m water depth	Bog Fen Marsh Rice fields Swamp Wetland
R	Riverine	"a channel, an open conduit either naturally or artificially created which periodically or continuously contains moving water or which forms a connecting link between two bodies of standing water" salinity ≤ 0.5 ppt	Creek River Stream Tidal River Tributary
NR	Not Reported		

Appendix Y. Substrate Codes (AQUIRE only)

Code	Definition
CL	Clay
GR	Gravel
M	Mineral
MX	Mixed substrate
MU	Mud
NR	Not Reported
O	Organic
SA	Sand
SI	Silt

Appendix Z. Depth Units

Code	Definition
NR	Not reported
cm	Centimeters
ft	Feet
in	Inches
m	Meters
mm	Millimeters

Appendix AA. Field Location Abbreviations (AQUIRE only)

Aqu	Aquatic
Agric	Agricultural
Co	County
Cr	Creek
Dev	Development
Dis	District
E ³	East
Env	Environmental
Exp	Experimental
Fish	Fisheries
Inst	Institute
Isl	Island
L	Lake
Lab	Laboratory
Natl	National
N ⁴	North
NE*	Northeast
NW*	Northwest
MT	Mountain
R	River
Res	Research
Resvr	Reservoir
S*	South
SE*	Southeast
SW	Southwest
St	Saint
Sta	Station
USFWS	United States Fish and Wildlife
Univ	University
W*	West

*Do not abbreviate directional information that is part of the proper name of a location (e.g. South L or Northwest Territory)

Appendix BB. Geographic Text (AQUIRE only)

AF	AFGHANISTAN	AL03	Durres	AG20	Blida
AF01	Badakhshan	AL04	Elbasan	AG39	Bordj Bou Arreridj
AF02	Badghis	AL05	Fier	AG21	Bouira
AF03	Baghlan	AL06	Gjirokaster	AG40	Boumerdes
AF30	Balkh	AL07	Gramsh	AG41	Chlef
AF05	Bamian	AL08	Kolonje	AG04	Constantine
AF06	Farah	AL09	Korce	AG22	Djelfa
AF07	Faryab	AL10	Kruje	AG42	El Bayadh
AF08	Ghazni	AL11	Kukes	AG43	El Oued
AF09	Ghowr	AL12	Lezhe	AG44	El Tarf
AF10	Helmand	AL13	Librazhd	AG45	Ghardaia
AF11	Herat	AL14	Lushnje	AG23	Guelma
AF31	Jowzjan	AL15	Mat	AG46	Illizi
AF13	Kabul	AL16	Mirdite	AG24	Jijel
AF23	Kandahar	AL17	Permet	AG47	Khenchela
AF13	Kapisa	AL18	Pogradec	AG25	Laghouat
AF15	Konar	AL19	Puke	AG26	Mascara
AF24	Kondo	AL20	Sarande	AG06	Medea
AF16	Laghman	AL21	Shkoder	AG48	Mila
AF17	Lowgar	AL22	Skrapar	AG07	Mostaganem
AF18	Nangarhar	AL23	Tepelene	AG27	M'sila
AF19	Nimruz	AL28	Tirane	AG49	Naama
AF20	Oruzgan	AL26	Tropoje	AG09	Oran
AF21	Paktia	AL27	Vlore	AG50	Ouargla
AF22	Paktika			AG29	Oum el Bouaghi
AF22	Parvan	AG	ALGERIA	AG51	Relizane
AF32	Samangan	AG34	Adrar	AG10	Saida
AF33	Sar-e Pol	AG35	Ain Defla	AG12	Setif
AF26	Takhar	AG36	Ain Temouchent	AG30	Sidi Bel Abbes
AF27	Vardak	AG01	Alger	AG31	Skikda
AF28	Zabol	AG37	Annaba	AG52	Souk Ahras
		AG03	Batna	AG53	Tamanghasset
AL	ALBANIA	AQ38	Bechar	AG33	Tebessa
AL01	Berat	AG18	Bejaia	AG13	Tiaret
AL02	Dibre	AG19	Biskra	AG54	Tindouf

AG55	Tipaza	AC	ANTIGUA AND BARBUDA
AG56	Tissemsilt		
AG14	Tizi Ouzou	AC01	Barbuda
AG15	Tlemcen	AC03	Saint George
		AC04	Saint John
		AC05	Saint Mary
AQ	AMERICAN SAMOA	AC06	Saint Paul

AN ANDORRA

AN01 Andorra

AN02 Canillo

AN03 Encamp

AN04 La Massana

AN05 Ordino

An06 Sant Julia de Loria

AO ANGOLA

AO19 Bengo

AO01 Benguela

AO02 Bie

AO03 Cabinda

AO04 Cuando Cubango

AO05 Cuanza Norte

AO06 Cuanza Sul

AO07 Cunene

AO08 Huambo

AO09 Huila

AO20 Luanda

AO17 Lunda Norte

AO18 Lunda Sul

AO12 Malanje

AO14 Moxico

AO15 Uige

AO16 Zaire

AV ANGUILLA

AY ANTARCTICA

AC07 Saint Peter	* AS AUSTRALIA	BF30 Kemps Bay
AC08 Saint Philip	AS01 Australian Capital Territory	BF15 Long Island
AR ARGENTINA	AS02 New South Wales	BF31 Marsh Harbour
AC01 Buenos Aires	AS03 Northern Territory	BF16 Mayaguana
AC02 Catamarca	AS04 Queensland	BF23 New Providence
AR03 Chaco	AS05 South Australia	BF32 Nichollstown and Berry Islands
AR04 Chubut	AS06 Tasmania	BF18 Ragged Island
AR05 Cordoba	AS07 Victoria	BF33 Rock Sound
AR06 Corrientes	AS08 Western Australia	BF34 Sandy Point
AR07 Distrito Federal		BF35 San Salvador and Rum Cay
AR08 Entre Rios		
AR09 Formosa	AU AUSTRIA	BA BAHRAIN
AR10 Jujuy	AU01 Burgenland	BA01 Al Hadd
AR11 La Pampa	AU02 Karnten	BA02 Al Manamah
AR12 La Rioja	AU03 Niederosterreich	BA08 Al Mintaqah al Gharbiyah
AR13 Mendoza	AU04 Oberosterreich	BA11 Al Mintaqah al Wusta
AR14 Misiones	AU05 Salzburg	BA10 Al Mintaqah ash Shamaliyah
AR15 Neuquen	AU06 Steiermark	BA03 Al Muharraaq
AR16 Rio Negro	AU07 Tirol	BA13 Ar Rifa` wa al Mintaqah al Janubiyah
AR17 Salta	AU08 Vorarlberg	BA05 Jidd Hafs
AR18 San Juan	AU09 Wien	BA14 Madinat Hamad
AR19 San Luis	AJ AZERBAIJAN	BA12 Madinat `Isa
AR20 Santa Cruz	BF BAHAMAS, THE	BA09 Mintaqat Juzur Hawar
AR21 Santa Fe	BF24 Acklins and Crooked Islands	BA06 Sitrah
AR22 Santiago del Estero	BF05 Bimini	
AR23 Tierra del Fuego, Antartidae Islas del Atlantico Sur	BF06 Cat Island	FQ BAKER ISLAND
AR24 Tucuman	BF10 Exuma	
AM ARMENIA	BF25 Freeport	BG BANGLADESH
AA ARUBA	BF26 Fresh Creek	BG22 Bagerhat
AT ASHMORE AND CARTIER ISLANDS	BF27 Governor's Harbour	BG04 Bandarban
	BF28 Green Turtle Cay	BG25 Barguna
	BF22 Harbour Island	BG01 Barisal
	BF29 High Rock	BG23 Bhola
	BG13 Inagua	BG24 Bogra

BG26	Brahmanbaria	BG61	Narsingdi	BO	BELARUS
BG27	Chandpur	BG62	Nator		
BG28	Chapai Nawabganj	BG63	Netrakona	BE	BELGIUM
BG29	Chattagram	BG64	Nilphamari	BE01	Antwerpen
BG30	Chuadanga	BG13	Noakhali	BE02	Brabant
BG05	Comilla	BG65	Pabna	BE03	Hainaut
BG31	Cox's Bazar	BG66	Panchagar	BE04	Liege
BG32	Dhaka	BG67	Parbattya Chattagram	BE05	Limburg
BG33	Dinajpur	BG15	Patuakhali	BE06	Luxembourg
BG34	Faridpur	BG68	Pirojpur	BE07	Namur
BG35	Feni	BG69	Rajbari	BE08	Oost-Vlaanderen
BG36	Gaibandha	BG70	Rajshahi	BE09	West-Vlaanderen
BG37	Gazipur	BG71	Rangpur		
BG38	Gopalganj	BG72	Satkhira	BH	BELIZE
BG39	Habiganj	BG73	Shariyatpur	BH01	Belize
BG40	Jaipurhat	BG74	Sherpur	BH02	Cayo
BG41	Jamalpur	BG75	Sirajganj	BH03	Corozal
BG42	Jessore	BG76	Sunamganj	BH04	Orange Walk
BG43	Jhalakati	BG77	Sylhet	BH05	Stann Creek
BG44	Jhenaidah	BG78	Tangail	BH06	Toledo
BG45	Khagrachari	BG79	Thakurgaon		
BG46	Khulna			BN	BENIN
BG47	Kishorganj	BB	BARBADOS	BN01	Atakora
BG48	Kurigram	BB01	Christ Church	BN02	Atlantique
BG49	Kushtia	BB02	Saint Andrew	BN03	Borgou
BG50	Laksmipur	BB03	Saint George	BN04	Mono
BG51	Lalmonirhat	BB04	Saint James	BN05	Oueme
BG52	Madaripur	BB05	Saint John	BN06	Zou
BG53	Magura	BB06	Saint Joseph		
BG54	Manikganj	BB07	Saint Lucy	BD	BERMUDA
BG55	Meherpur	BB08	Saint Michael	BD01	Devonshire
BG56	Moulavibazar	BB09	Saint Peter	BD03	Hamilton
BG57	Munshiganj	BB10	Saint Philip	BD03	Hamilton
BG12	Mymensingh	BB11	Saint Thomas	BD04	Paget
BG58	Naogaon			BD05	Pembroke
BG59	Narail	BS	BASSAS DA INDIA	BD06	Saint George
BG60	Narayanganj			BD07	Saint George's

BD08 Sandys	* BC BOTSWANA	BR25 Roraima
BD09 Smiths	BC01 Central	BR26 Santa Catarina
BD10 Southampton	BC02 Chobe	BR27 Sao Paulo
BD11 Warwick	BC03 Ghanzi	BR28 Sergipe
	BC04 Kgalagadi	BR31 Tocantins
BT BHUTAN	BC05 Khatleng	
BT05 Bumthang	BC06 Kweneng	IO BRITISH INDIAN
BT06 Chhukha	BC07 Ngamitland	OCEAN
BT07 Chirang	BC08 North-East	TERRITORY
BT08 Daga	BC09 South-East	
BT09 Geylegphug	BC10 Southern	VI BRITISH VIRGIN
BT10 Ha		ISLANDS
BT11 Lhuntshi	BV BOUVET ISLAND	
BT12 Mongar		BX BRUNEI
BT13 Paro	* BR BRAZIL	BX01 Belait
BT14 Pemagatset	BR01 Acre	BX02 Brunei and Muara
BT15 Punakha	BR02 Alagoas	BX03 Temburong
BT16 Samchi	BR03 Amapa	BX04 Tutong
BT17 Samdrup	BR04 Amazonas	
BT18 Shemgang	BR05 Bahia	BU BULGARIA
BT19 Tashigang	BR06 Ceara	BU29 Burgas
BT20 Thimphu	BR07 Distrito Federal	BU30 Grad Sofiya
BT21 Tongsa	BR08 Espirito Santo	BU31 Khaskovo
BT22 Wangdi Phodrang	BR29 Goias	BU32 Lovech
	BR13 Maranhao	BU33 Mikhaylovgrad
BL BOLIVIA	BR14 Mato Grosso	BU34 Plovdiv
BL01 Chuquisaca	BR11 Mato Grosso do Sul	BU35 Razgrad
BL02 Cochabamba	BR15 Minas Gerais	BU36 Sofiya
BL03 El Beni	BR16 Para	BU37 Varna
BL04 La Paz	BR17 Paraiba	
BL05 Oruro	BR18 Parana	* UV BURKINA
BL06 Pando	BR30 Pernambuco	UV15 Bam
BL07 Potosi	BR20 Piaui	UV16 Bazega
BL08 Santa Cruz	BR21 Rio de Janeiro	UV17 Bougouriba
BL09 Tarija	BR22 Rio Grande do Norte	UV18 Boulgou
	BR23 Rio Grande do Sul	UV19 Boulkiemde
BK BOSNIA AND	BR24 Rondonia	UV20 Ganzourgou
HERZEGOVINA		UV21 Gnagna

UV22 Gourma	BM12 Tenasserim	CB18 Svay Rieng
UV23 Houet		CB19 Takev
UV24 Kadiogo	BY BURUNDI	
UV25 Kenedougou	BY09 Bubanza	* CM CAMEROON
UV26 Komoe	BY02 Bujumbura	CM10 Adamaoua
UV27 Kossi	BY10 Bururi	CM11 Centre
UV28 Kouritenga	BY11 Cankuzo	CM04 Est
UV29 Mouhoun	BY12 Cibitoke	CM12 Extreme-Nord
UV30 Namentenga	BY13 Gitega	CM05 Littoral
UV31 Naouri	BY14 Karuzi	CM13 Nord
UV32 Oubritenga	BY15 Kayanza	CM07 Nord-Ouest
UV33 Oudalan	BY16 Kirundo	CM08 Ouest
UV34 Passore	BY17 Makamba	CM14 Sud
UV35 Poni	BY05 Muramvya	CM09 Sud-Ouest
UV36 Sanguie	BY18 Muyinga	
UV37 Sanmatenga	BY19 Ngozi	* CA CANADA
UV38 Seno	BY20 Rutana	* CA01 Alberta
UV39 Sissili	BY21 Ruyigi	* CA02 British Columbia
UV40 Soum		* CA03 Manitoba
UV41 Sourou	CB CAMBODIA	* CA04 New Brunswick
UV42 Tapoa	CB01 Batdambang	* CA05 Newfoundland
UV43 Yatenga	CB02 Kampong Cham	* CA06 Northwest Territories
UV44 Zoundweogo	CB03 Kampong Chhnang	* CA07 Nova Scotia
BM BURMA	CB04 Kampong Spoe	* CA08 Ontario
BM02 Chin State	CB05 Kampong Thum	* CA09 Prince Edward Island
BM03 Irrawaddy	CB06 Kampot	* CA10 Quebec
BM04 Kachin State	CB07 Kandal	* CA11 Saskatchewan
BM05 Karan State	CB08 Kaoh Kong	* CA12 Yukon Territory
BM06 Kayah State	CB09 Kracheh	
BM07 Magwe	CB10 Mondol Kiri	CV CAPE VERDE
BM08 Mandalay	CB11 Phnum Penh	CV01 Boa Vista
BM13 Mon State	CB12 Pouthisat	CV02 Brava
BM09 Pegu	CB13 Preah Vihear	CV03 Fogo
BM01 Rakhine State	CB14 Prey Veng	CV04 Maio
BM14 Rangoon	CB15 Rotanokiri	CV05 Paul
BM10 Sagaing	CB16 Siemreab-Otdar	CV06 Praia
BM11 Shan State	Meanchey	CV07 Ribeira Grande
	CB17 Stoeng Treng	

CV08 Sal	CD02 Biltine	CH16 Guangxi
CV09 Santa Catarina	CD03 Borkou-Ennedi-Tibesti	CH18 Guizhou
CV10 Sao Nicolau	CD04 Chari-Baguirmi	CH31 Hainan
CV11 Sao Vicente	CD05 Guera	CH10 Hebei
CV12 Tarrafal	CD06 Kanem	CH08 Heilongjiang
	CD07 Lac	CH09 Henan
CJ CAYMAN ISLANDS	CD08 Logone Occidental	CH12 Hubei
CJ01 Creek	CD09 Logone Oriental	CH11 Hunan
CJ02 Eastern	CD10 Mayo-Kebbi	CH04 Jiangsu
CJ03 Midland	CD11 Moyen-Chari	CH03 Jiangxi
CJ04 South Town	CD12 Ouaddai	CH05 Jilin
CJ05 Spot Bay	CD13 Salamat	CH19 Liaoning
CJ06 Stake Bay	CD14 Tandjile	CH20 Nei Mongol
CJ07 West End		CH21 Ningxia
CJ08 Western	CI CHILE	CH06 Qinghai
	CI02 Aisen del General Carlos Ibanez del Campo	CH26 Shaanxi
CT CENTRAL AFRICAN REPUBLIC	CI03 Antofagasta	CH25 Shandong
CT01 Bamingui-Bangoran	CI04 Araucania	CH23 Shanghai
CT18 Bangui	CI05 Atacama	CH24 Shanxi
CT02 Basse-Kotto	CI06 Bio-Bio	CH27 Sichuan
CT15 Gribingui	CI07 Coquimbo	CH28 Tianjin
CT03 Haute-Kotto	CI08 Libertador General Bernardo O'Higgins	CH13 Xinjiang
CT04 Haute-Sangha	CI09 Los Lagos	CH14 Xizang
CT05 Haut-Mbomou	CI10 Magallanes y de la Antartica Chilena	CH29 Yunnan
CT06 Kemo-Gribingui	CI11 Maule	CH02 Zhejiang
CT07 Lobaye	CI12 Region Metropolitana	
CT08 Mbomou	CI13 Tarapaca	KT CHRISTMAS ISLAND
CT09 Nana-Mambere	Valparaiso	
CT17 Ombella-Mpoko		IP CLIPPERTON ISLAND
CT11 Ouaka		
CT12 Ouham	* CH CHINA	CK COCOS (KEELING) ISLANDS
CT13 Ouham-Pende	CH01 Anhui	
CT16 Sangha	CH22 Beijing	CO COLOMBIA
CT14 Vakaga	CH07 Fujian	CO01 Amazonas
	CH15 Gansu	CO02 Antioquia
CD CHAD	CH30 Guangdong	CO03 Arauca
CD01 Batha		CO04 Atlantico

CO35 Bolivar	CF12 Brazzaville	IV03 Dabakala
CO36 Boyaca	CF03 Cuvette	IV41 Daloa
CO37 Caldas	CF04 Kouilou	IV14 Danane
CO08 Caqueta	CF05 Lekoumou	IV42 Daoukro
CO32 Casanare	CF06 Likouala	IV43 Dimbokro
CO09 Cauca	CF07 Niari	IV16 Divo
CO10 Cesar	CF08 Plateaux	IV44 Duekoue
CO11 Choco	CF11 Pool	IV17 Ferkessedougou
CO12 Cordoba	CF10 Sangha	IV18 Gagnoa
CO33 Cundinamarca		IV45 Grand-Lahou
CO34 Distrito Especial	CW COOK ISLANDS	IV46 Guiglo
CO15 Guainia	CR CORAL SEA ISLANDS	IV28 Issia
CO14 Guaviare		IV20 Katiola
CO16 Huila	CS COSTA RICA	IV21 Korhogo
CO17 La Guajira	CS01 Alajuela	IV29 Lakota
CO38 Magdalena	CS02 Cartago	IV47 Man
CO19 Meta	CS03 Guanacaste	IV30 Mankono
CO20 Narino	CS04 Heredia	IV48 Mbahiakro
CO21 Norte de Santander	CS06 Limon	IV23 Odienne
CO22 Putumayo	CS07 Puntarenas	IV31 Oume
CO23 Quindio	CS08 San Jose	IV49 Sakassou
CO24 Risaralda		IV50 San Pedro
CO25 San Andres y Providencia	IV COTE D'IVOIRE	IV51 Sassandra
CO26 Santander	IV01 Abengourou	IV25 Seguela
CO27 Sucre	IV35 Abidjan	IV52 Sinfra
CO28 Tolima	IV04 Aboisso	IV32 Soubre
CO29 Valle del Cauca	IV05 Adzope	IV53 Tabou
CO30 Vaupes	IV06 Agboville	IV54 Tanda
CO31 CVichada	IV36 Bangolo	IV55 Tiassale
	IV37 Beoumi	IV33 Tingrela
	IV07 Biankouma	IV26 Toubia
CN COMOROS	IV38 Bondoukou	IV56 Toumodi
CN01 Anjouan	IV27 Bongouanou	IV57 Vavoua
CN02 Grande Comore	IV39 Bouafle	IV58 Yamoussoukro
CN03 Moheli	IV40 Bouake	IV34 Zuenoula
	IV11 Bouna	
CF CONGO	IV12 Boundiali	HR CROATIA
CF01 Bouenza		

CU CUBA	DA11 Sonderjylland	DR09 Independencia
CU05 Camaguey	DA06 Staden Kobenhavn	DR10 La Altagracia
CU07 Ciego de Avila	DA12 Storstrom	DR12 La Romana
CU08 Cienfuegos	DA13 Vejle	DR30 La Vega
CU02 Ciudad de la Habana	DA14 Vestsjalland	DR14 Maria Trinidad Sanchez
CU09 Granma	DA15 Viborg	DR31 Monsenor Nouel
CU10 Guantanamo		DR15 Monte Cristi
CU12 Holguin	DJ DJIBOUTI	DR32 Monte Plata
CU04 Isla de la Juventud	DJ01 `Ali Sabih	DR16 Pedernales
CU11 La Habana	DJ02 Dikhil	DR17 Peravia
CU13 Las Tunas	DJ03 Djibouti	DR18 Puerto Plata
CU03 Matanzas	DJ04 Obock	DR19 Salcedo
CU01 Pinar del Rio	DJ05 Tadjoura	DR20 Samana
CU14 Sancti Spiritus		DR21 Sanchez Ramirez
CU15 Santiago de Cuba	DO DOMINICA	DR33 San Cristobal
CU16 Villa Clara	DO02 Saint Andrew	DR23 San Juan
	DO03 Saint David	DR24 San Pedro De Macoris
CY CYPRUS	DO04 Saint George	DR25 Santiago
CY01 Famagusta	DO05 Saint John	DR26 Santiago Rodriguez
CY02 Kyrenia	DO06 Saint Joseph	DR27 Valverde
CY03 Larnaca	DO07 Saint Luke	
CY05 Limassol	DO08 Saint Mark	EC ECUADOR
CY04 Nicosia	DO09 Saint Patrick	EC02 Azuay
CY06 Paphos	DO10 Saint Paul	EC03 Bolivar
	DO11 Saint Peter	EC04 Canar
* EZ CZECH REPUBLIC		EC05 Carchi
	DR DOMINICAN REPUBLIC	EC06 Chimborazo
* DA DENMARK	DR01 Azua	EC07 Cotopaxi
DA01 Arhus	DR02 Baoruco	EC08 El Oro
DA02 Bornholm	DR03 Barahona	EC09 Esmeraldas
DA03 Frederiksborg	DR04 Dajabon	EC01 Galapagos
DA04 Fyn	DR05 Distrito Nacional	EC10 Guayas
DA05 Kobenhavn	DR06 Duarte	EC11 Imbabura
DA07 Nordjylland	DR11 Elias Pina	EC12 Loja
DA08 Ribe	DR28 El Seibo	EC13 Los Rios
DA09 Ringkobing	DR08 Espaillat	EC14 Manabi
DA10 Roskilde	DR29 Hato Mayor	

EC15	Morona-Santiago	ES01	Ahuachapan	EN11	Parnumaa
EC21	Napo	ES02	Cabanas	EN12	Polvamaa
EC17	Pastaza	ES03	Chalatenango	EN13	Raplamaa
EC18	Pichincha	ES04	Cuscatlan	EN14	Saaremaa
EC22	Sucumbios	ES05	La Libertad	EN15	Sillamae
EC19	Tungurahua	ES06	La Paz	EN16	Tallinn
EC20	Zamora-Chinchipe	ES07	La Union	EN17	Tartu
		ES08	Morazan	EN18	Tartumaa
* EG	EGYPT	ES09	San Miguel	EN19	Valgamaa
EG01	Ad Daqahliyah	ES10	San Salvador	EN20	Viljandimaa
EG02	Al Bahr al Ahmar	ES11	Santa Ana	EN21	Vorumaa
EG03	Al Buhayrah	ES12	San Vicente		
EG04	Al Fayyum	ES13	Sonsonate	ET	ETHIOPIA
EG05	Al Gharbiyah	ES14	Usulután	ET15	Adis Abeba
EG06	Al Iskandariyah			ET01	Arsi
EG07	Al Isma'iliyah	EK	EQUATORIAL GUINEA	ET17	Asosa
EG08	Al Jizah	EK03	Annobon	ET38	Bale
EG09	Al Minufiyah	EK04	Bioko Norte	ET18	Borena
EG10	Al Minya	EK05	Bioko Sur	ET19	Debub Gonder
EG11	Al Qahirah	EK06	Centro Sur	ET20	Debub Shewa
EG12	Al Qalyubiyah	EK07	Kie-Ntem	ET21	Debub Welo
EG13	Al Wadi al Jadid	EK08	Litoral	ET22	Dire Dawa
EG14	Ash Sharqiyah	EK09	Wele-Nzas	ET23	Gambela
EG15	As Suways			ET39	Gamo Gofa
EG16	Aswan	ER	ERITREA	ET40	Ilubabor
EG17	Asyut			ET41	Kefa
EG18	Bani Suwayf	EN	ESTONIA	ET24	Metekel
EG19	Bur Sa'id	EN01	Harjumaa	ET25	Mirab Gojam
EG20	Dumyat	EN02	Hiumaa	ET26	Mirab Harerge
EG26	Janub Sina'	EN03	Ida-Virumaa	ET27	Mirab Shewa
EG21	Kafr ash Shaykh	EN04	Jarvamaa	ET28	Misrak Gojam
EG22	Matruh	EN05	Jogevamaa	ET29	Misrak Harerge
EG23	Qina	EN06	Kohtla-Jarve	ET30	Nazret
EG27	Shamal Sina'	EN07	Laanemaa	ET31	Ogaden
EG24	Suhaj	EN08	Laane-Virumaa	ET32	Omo
		EN09	Narva	ET33	Semen Gonder
ES	EL SALVADOR	EN10	Parnu	ET34	Semen Shewa

ET35 Semen Welo

ET42 Sidamo

ET37 Tigray

ET43 Welega

EU EUROPA ISLAND

FK FALKLAND ISLANDS
(ISLAS MALVINAS)

FO FAROE ISLANDS

FM FEDERATED STATES
OF MICRONESIA

FM03 Chuuk

FM01 Kosrae

FM02 Pohnpei

FM04 Yap

FJ FIJI

FJ01 Central

FJ02 Eastern

FJ03 Northern

FJ04 Rotuma

FJ05 Western

* FI FINLAND

FI01 Ahvenanmaa

FI02 Hame

FI03 Keski-Suomi

FI04 Kuopio

FI05 Kymi

FI06 Lappi

FI07 Mikkeli

FI08 Oulu

FI09 Pohjois-Karjala FI10
Turku ja Pori

FI11 Uusimaa

FI12 Vaasa

* FR FRANCE

FRC1 Alsace

FR97 Aquitaine

FR98 Auvergne

FR99 Basse-Normandie

FRA1 Bourgogne

FRA2 Bretagne

FRA3 Centre

FRA4 Champagne-Ardenne

FRA5 Corse

FRA6 Franche-Comte

FRA7 Haute-Normandie

FRA8 Ile-de-France

FRA9
Languedoc-Roussillon

FRB1 Limousin

FRB2 Lorraine

FRB3 Midi-Pyrenees

FRB4 Nord-Pas-de-Calais

FRB5 Pays de la Loire

FRB6 Picardie

FRB7 Poitou-Charentes

FRB8 Provence-Alpes-Cote
d'Azur

FRB9 Rhone-Alpes

FG FRENCH GUIANA

FP FRENCH POLYNESIA

FS FRENCH SOUTHERN
AND ANTARCTIC LANDS

GB GABON

GB01 Estuaire

GB02 Haut-Ogooue

GB03 Moyen-Ogooue

GB04 Ngounie

GB05 Nyanga

GB06 Ogooue-Ivindo

GB07 Ogooue-Lolo

GB08 Ogooue-Maritime

GB09 Woleu-Ntem

GA GAMBIA, THE

GA01 Banjul

GA02 Lower River

GA03 MacCarthy Island

GA07 North Bank

GA04 Upper River

GA05 Western

GZ GAZA STRIP

GG GEORGIA

* GM GERMANY

GM01 Baden-Wurtemberg

GM02 Bayern

GM16 Berlin

GM11 Brandenburg

GM03 Bremen

GM04 Hamburg

GM05 Hessen	GR01 Evros	GR13 Thessaloniki
GM12 Mecklenburg-Vorpommern	GR34 Evvoia	GR22 Trikala
GM06 Niedersachsen	GR08 Florina	GR33 Voiotia
GM07 Nordrhein-Westfalen	GR32 Fokis	GR03 Xanthi
GM08 Rheinland-Pfalz	GR29 Fthiotis	GR28 Zakynthos
GM09 Saarland	GR10 Grevena	
GM13 Sachsen	GR39 Ilia	GL GREENLAND
GM14 Sachsen-Anhalt	GR12 Imathia	GL01 Nordgronland
GM10 Schleswig-Holstein	GR17 Ioannina	GL02 Ostgronland
GM15 Thuringen	GR45 Iraklion	GL03 Vestgronland
	GR23 Kardhitsa	
* GH GHANA	GR09 Kastoria	GJ GRENADA
GH02 Ashanti	GR14 Kavala	GJ01 Saint Andrew
GH03 Brong-Ahafo	GR27 Kefallinia	GJ02 Saint David
GH04 Central	GR25 Kerkira	GJ03 Saint George
GH05 Eastern	GR15 Khalkidhiki	GJ04 Saint John
GH01 Greater Accra	GR43 Khania	GJ05 Saint Mark
GH06 Northern	GR50 Khios	GJ06 Saint Patrick
GH10 Upper East	GR49 Kikladhes	
GH11 Upper West	GR06 Kilkis	GP GUADELOUPE
GH08 Volta	GR37 Korinthia	
GH09 Western	GR11 Kozani	GQ GUAM
	GR42 Lakonia	
GI GIBRALTAR	GR21 Larisa	GT GUATEMALA
	GR46 Lasithi	GT01 Alta Verapaz
GO GLORIOSO ISLANDS	GR51 Lesvos	GT02 Baja Verapaz
	GR26 Levkas	GT03 Chimaltenango
GR GREECE	GR24 Magnisia	GT04 Chiquimula
GR31 Aitolia kai Akarnania	GR40 Messinia	GT05 El Progreso
GR38 Akhaia	GR07 Pella	GT06 Escuintla
GR36 Argolis	GR16 Pieria	GT07 Guatemala
GR41 Arkadhia	GR19 Preveza	GT08 Huehuetenango
GR20 Arta	GR44 Rethimni	GT09 Izabal
GR35 Attiki	GR02 Rodhopi	GT10 Jalapa
GR47 Dhodhekanisos	GR48 Samos	GT11 Jutiapa
GR04 Drama	GR05 Serrai	GT12 Peten
GR30 Evritania	GR18 Thesprotia	GT14 Quiche

GT13	Quetzaltenango	GV25	Pita	HA03	Nord-Ouest
GT15	Retalhuleu	GV26	Sigüiri	HA11	Ouest
GT16	Sacatepequez	GV27	Telimele	HA12	Sud
GT17	San Marcos	GV28	Tougue	HA13	Sud-Est
GT18	Santa Rosa	GV29	Yomou		
GT19	Solola			HM	HEARD ISLAND AND MCDONALD ISLANDS
GT20	Suchitepequez	PU	GUINEA-BISSAU		
GT21	Totonicapan	PU01	Bafata		
GT22	Zacapa	PU12	Biombo	HO	HONDURAS
		PU11	Bissau	HO01	Atlantida
GK	GUERNSEY	PU05	Bolama	HO02	Choluteca
		PU06	Cacheu	HO03	Colon
GV	GUINEA	PU10	Gabu	HO04	Comayagua
GV01	Beyla	PU04	Oio	HO05	Copan
GV02	Boffa	PU02	Quinara	HO06	Cortes
GV03	Boke	PU07	Tombali	HO07	El Paraiso
GV04	Conakry			HO08	Francisco Morazan
GV05	Dabola	GY	GUYANA	HO09	Gracias a Dios
GV06	Dalaba	GY10	Barima-Waini	HO10	Intibuca
GV07	Dinguiraye	GY11	Cuyuni-Mazaruni	HO11	Islas de la Bahia
GV08	Dubreka	GY12	Demerara-Mahaica	HO12	La Paz
GV09	Faranah	GY13	East Berbice-Corentyne	HO13	Lempira
GV10	Forecariah	GY14	Essequibo Islands-West Demerara	HO14	Ocotepeque
GV11	Fria	GY15	Mahaica-Berbice	HO15	Olancho
GV12	Gaoual	GY16	Pomeroon-Supenaam	HO16	Santa Barbara
GV13	Gueckedou	GY17	Potaro-Siparuni	HO17	Valle
GV14	Kankan	GY18	Upper Demerara-Berbice	HO18	Yoro
GV15	Kerouane	GY19	Upper Takutu-Upper Essequibo	HK	HONG KONG
GV16	Kindia			HQ	HOWLAND ISLAND
GV17	Kissidougou	HA	HAITI		
GV18	Koundara	HA06	Artibonite	* HU	HUNGARY
GV19	Kouroussa	HA07	Centre	HU01	Bacs-Kiskun
GV20	Labe	HA08	Grand' Anse	HU02	Baranya
GV21	Macenta	HA09	Nord	HU03	Bekes
GV22	Mali	HA10	Nord-Est	HU26	Bekescsaba
GV23	Mamou				
GV24	Nzerekore				

HU04 Borsod-Abauj-Zemplen	HU40 Zalaegerszeg	IC33 Vestmannaeyjar
HU05 Budapest	IC ICELAND	IC34 Vestur-Bardastrandarsysla
HU06 Csongrad	IC01 Akranes	IC35 Vestur-Hunavatnssysla
HU07 Debrecen	IC02 Akureyri	IC36 Vestur-Isafjardarsysla
HU27 Dunaujvaros	IC03 Arnessysla	IC37 Vestur-Skaftafellssysla
HU28 Eger	IC04	
HU08 Fejer	Austur-Bardastrandarsysla	* IN INDIA
HU25 Gyor	IC05	IN01 Andaman and Nicobar Islands
HU09 Gyor-Moson-Sopron	Austur-Hunavatnssysla	IN02 Andhra Pradesh
HU10 Hajdu-Bihar	IC06 Austur-Skaftafellssysla	IN30 Arunachal Pradesh
HU11 Heves	IC07 Borgarfjardarsysla	IN03 Assam
HU29 Hodmezovasarhely	IC08 Dalasysla	IN04 Bihar
HU20 Jasz-Nagykun-Szolnok	IC09 Eyjafjardarsysla	IN05 Chandigarh
HU30 Kaposvar	IC10 Gullbringusysla	IN06 Dadra and Nagar Haveli
HU31 Kecskemet	IC11 Hafnarfjordur	IN32 Daman and Diu
HU12 Komarom-Esztergom	IC12 Husavik	IN07 Delhi
HU13 Miskolc	IC13 Isafjordur	IN33 Goa
HU32 Nagykanizsa	IC14 Keflavik	IN09 Gujarat
HU14 Nograd	IC15 Kjosarsysla	IN10 Haryana
HU33 Nyiregyhaza	IC16 Kopavogur	IN11 Himachal Pradesh
HU15 Pecs	IC17 Myrasysla	IN12 Jammu and Kashmir
HU16 Pest	IC18 Neskaupstadur	IN19 Karnataka
HU17 Somogy	IC19 Nordur-Isafjardarsysla	IN13 Kerala
HU34 Sopron	IC20 Nordur-Mulasysla	IN14 Lakshadweep
HU18 Szabolcs-Szatmar-Bereg	IC21 Nordur-Tingeyjarsysla	IN15 Madhya Pradesh
HU19 Szeged	IC22 Olafsfjordur	IN16 Maharashtra
HU35 Szekesfehervar	IC23 Rangarvallasysla	IN17 Manipur
HU36 Szolnok	IC24 Reykjavik	IN18 Meghalaya
HU37 Szombathely	IC25 Saudarkrokur	IN31 Mizoram
HU38 Tatabanya	IC26 Seydisfjordur	IN20 Nagaland
HU21 Tolna	IC27 Siglufjordur	IN21 Orissa
HU22 Vas	IC28 Skagafjardarsysla	IN22 Pondicherry
HU23 Veszprem	IC29 Snafellsnes- og Hnappadalssysla	IN23 Punjab
HU39 Veszprem	IC30 Strandarsysla	IN24 Rajasthan
HU24 Zala	IC31 Sudur-Mulasysla	IN29 Sikkim
	IC32 Sudur-Tingeyjarsysla	

IN25	Tamil Nadu	IR13	Bakhtaran	IZ10	Diyala
IN26	Tripura	IR22	Bushehr	IZ12	Karbala'
IN27	Uttar Pradesh	IR03	Chahar Mahall va Bakhtiari	IZ14	Maysan
IN28	West Bengal	IR28	Esfahan	IZ15	Ninawa
		IR07	Fars	IZ18	Salah ad Din
ID	INDONESIA	IR08	Gilan	IZ16	Wasit
ID01	Aceh	IR09	Hamadan		
ID02	Bali	IR11	Hormozgan	EI	IRELAND
ID03	Bengkulu	IR10	Ilam	EI01	Carlow
ID09	Irian Jaya	IR29	Kerman	EI02	Cavan
ID04	Jakarta Raya	IR30	Khorasan	EI03	Clare
ID05	Jambi	IR15	Khuzestan	EI04	Cork
ID06	Jawa Barat	IR05	Kohkiluyeh va Buyer Ahmadi	EI06	Donegal
ID07	Jawa Tengah	IR16	Kordestan	EI07	Dublin
ID08	Jawa Timur	IR23	Lorestan	EI10	Galway
ID11	Kalimantan Barat	IR24	Markazi	EI11	Kerry
ID12	Kalimantan Selatan	IR17	Mazandaran	EI12	Kildare
ID13	Kalimantan Tengah	IR25	Semnan	EI13	Kilkenny
ID14	Kalimantan Timur	IR04	Sistan va Baluchestan	EI15	Laois
ID15	Lampung	IR26	Tehran	EI14	Leitrim
ID16	Maluku	IR31	Yazd	EI16	Limerick
ID17	Nusa Tenggara Barat	IR27	Zanjan	EI18	Longford
ID18	Nusa Tenggara Timur			EI19	Louth
ID19	Riau			EI20	Mayo
ID20	Sulawesi Selatan	IZ	IRAQ	EI21	Meath
ID21	Sulawesi Tengah	IZ01	Al Anbar	EI22	Monaghan
ID22	Sulawesi Tenggara	IZ02	Al Basrah	EI23	Offaly
ID23	Sulawesi Utara	IZ03	Al Muthanna	EI24	Roscommon
ID24	Sumatera Barat	IZ04	Al Qadisiyah	EI25	Sligo
ID25	Sumatera Selatan	IZ17	An Najaf	EI26	Tipperary
ID26	Sumatera Utara	IZ11	Arbil	EI27	Waterford
ID27	Timor Timur	IZ05	As Sulaymaniyah	EI29	Westmeath
ID10	Yogyakarta	IZ13	At Ta'mim	EI30	Wexford
		IZ06	Babil	EI31	Wicklow
* IR	IRAN	IZ07	Baghdad		
IR01	Azərbayjan-e Bakhtari	IZ08	Dahuk	* IS	ISRAEL
IR02	Azərbayjan-e Khavari	IZ09	Dhi Qar	IS01	HaDarom

IS02 HaMerkaz	JM11 Saint Elizabeth	JA28 Nara
IS03 HaZafon	JM12 Saint James	JA29 Niigata
IS04 Hefa	JM13 Saint Mary	JA30 Oita
IS05 Tel Aviv	JM14 Saint Thomas	JA31 Okayama
IS06 Yerushalayim	JM15 Trelawny	JA47 Okinawa
	JM16 Westmoreland	JA32 Osaka
* IT ITALY		JA33 Saga
IT01 Abruzzi	JN JAN MAYEN	JA34 Saitama
IT02 Basilicata		JA35 Shiga
IT03 Calabria	* JA JAPAN	JA36 Shimane
IT04 Campania	JA01 Aichi	JA37 Shizuoka
IT05 Emilia-Romagna	JA02 Akita	JA38 Tochigi
IT06 Friuli-Venezia Giulia	JA03 Aomori	JA39 Tokushima
IT07 Lazio	JA04 Chiba	JA40 Tokyo
IT08 Liguria	JA05 Ehime	JA41 Tottori
IT09 Lombardia	JA06 Fukui	JA42 Toyama
IT10 Marche	JA07 Fukuoka	JA43 Wakayama
IT11 Molise	JA08 Fukushima	JA44 Yamagata
IT12 Piemonte	JA09 Gifu	JA45 Yamaguchi
IT13 Puglia	JA10 Gumma	JA46 Yamanashi
IT14 Sardegna	JA11 Hiroshima	
IT15 Sicilia	JA12 Hokkaido	DQ JARVIS ISLAND
IT16 Toscana	JA13 Hyogo	
IT17 Trentino-Alto Adige	JA14 Ibaraki	JE JERSEY
IT18 Umbria	JA15 Ishikawa	
IT19 Valle d'Aosta	JA16 Iwate	JQ JOHNSTON ATOLL
IT20 Veneto	JA17 Kagawa	
	JA18 Kagoshima	JO JORDAN
* JM JAMAICA	JA19 Kanagawa	JO02 Al Balqa'
JM01 Clarendon	JA20 Kochi	JO09 Al Karak
JM02 Hanover	JA21 Kumamoto	JO10 Al Mafrag
JM17 Kingston	JA22 Kyoto	JO11 `Amman
JM04 Manchester	JA23 Mie	JO12 At Tafilah
JM07 Portland	JA24 Miyagi	JO13 Az Zarqa
JM08 Saint Andrew	JA25 Miyazaki	JO14 Irbid
JM09 Saint Ann	JA26 Nagano	JO07 Ma`an
JM10 Saint Catherine	JA27 Nagasaki	

JU JUAN DE NOVA ISLAND	KS03 Cholla-bukto	LG LATVIA
	KS16 Cholla-namdo	
KZ KAZAKHSTAN	KS05 Ch'ungch'ong-bukto	LE LEBANON
	KS17 Ch'ungch'ong-namdo	Al Biqa`
KE KENYA	KS12 Inch'on-jikhalsi	Al Janub
KE01 Central	KS06 Kangwon-do	Ash Shamal
KE02 Coast	KS18 Kwangju-jikhalsi	Bayrut
KE03 Eastern	KS13 Kyonggi-do	Jabal Lubnan
KE05 Nairobi Area	KS14 Kyongsang-bukto	
KE06 North-Eastern	KS08 Kyongsang-namdo	LT LESOTHO
KE07 Nyanza	KS10 Pusan-jikhalsi	LT10 Berea
KE08 Rift Valley	KS11 Soul-t'ukpyolsi	LT11 Butha-Buthe
KE09 Western	KS15 Taegu-jikhalsi	LT12 Leribe
	KS19 Taejon-jikhalsi	LT13 Mafeteng
KQ KINGMAN REEF		LT14 Maseru
	KU KUWAIT	LT15 Mohales Hoek
KR KIRIBATI	KU01 Al Ahmadi	LT16 Mokhotlong
KR01 Gilbert Islands	KU02 Al Kuwayt	LT17 Qachas Nek
KR02 Line Islands	KU03 Hawalli	LT18 Quthing
KR03 Phoenix Islands		LT19 Thaba-Tseka
	KG KYRGYZSTAN	
KN KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	LA LAOS	LI LIBERIA
KN01 Chagang-do	LA01 Attapu	LI01 Bong
KN16 Hamgyong-bukto	LA02 Champasak	LI03 Grand Bassa
KN03 Hamgyong-namdo	LA03 Houaphan	LI04 Grand Cape Mount
KN07 Hwanghae-bukto	LA04 Khammouan	LI02 Grand Jide
KN06 Hwanghae-namdo	LA05 Louang Namtha	LI05 Lofa
KN08 Kaesong-si	LA06 Louangphrabang	LI06 Maryland
KN09 Kangwon-do	LA07 Oudomxai	LI07 Monrovia
KN14 Namp'o-si	LA08 Phongsali	LI08 Montserrado
KN11 P'yongan-bukto	LA09 Saravan	LI09 Nimba
KN15 P'yongan-namdo	LA10 Savannakhet	LI10 Sino
KN12 P'yongyang-si	LA11 Vientiane	
KN13 Yanggang-do	LA13 Xaignabouri	LY LIBYA
	LA14 Xiangkhoang	LY47 Ajdabiya
* KS KOREA, REPUBLIC OF		LY03 Al `Aziziyah
KS01 Cheju-do		LY48 Al Fatih

LY49	Al Jabal al Akhdar			MI18	Nkhotakota
LY05	Al Jufrah	LU	LUXEMBOURG	MI19	Nsanje
LY50	Al Khums	LU01	Diekirch	MI16	Ntcheu
LY08	Al Kufrah	LU02	Grevenmacher	MI20	Ntchisi
LY51	An Nuqat al Khams	LU03	Luxembourg	MI21	Rumphi
LY13	Ash Shati'			MI22	Salima
LY52	Awbari	MC	MACAU	MI05	Thyolo
LY53	Az Zawiyah	MC01	Ilhas	MI23	Zomba
LY54	Banghazi	MC02	Macau		
LY55	Darnah			* MY	MALAYSIA
LY56	Ghadamis	MK	MACEDONIA	MY01	Johor
LY57	Gharyan			MY02	Kedah
LY58	Misratah	MA	MADAGASCAR	MY03	Kelantan
LY30	Murzuq	MA05	Antananarivo	MY15	Labuan
LY34	Sabha	MA01	Antsiranana	MY04	Melaka
LY59	Sawfajjin	MA02	Fianarantsoa	MY05	Negeri Sembilan
LY60	Surt	MA03	Mahajanga	MY06	Pahang
LY61	Tarabulus	MA04	Toamasina	MY07	Perak
LY41	Tarhunah	MA06	Toliara	MY08	Perlis
LY42	Tubruq			MY09	Pulau Pinang
LY62	Yafran	MI	MALAWI	MY16	Sabah
LY45	Zlitan	MI24	Blantyre	MY11	Sarawak
		MI02	Chikwawa	MY12	Selangor
LS	LIECHTENSTEIN	MI03	Chiradzulu	MY13	Terengganu
LS01	Balzers	MI04	Chitipa	MY14	Wilayah Persekutuan
LS02	Eschen	MI06	Dedza		
LS03	Gamprin	MI07	Dowa		
LS04	Mauren	MI08	Karonga	MV	MALDIVES
LS05	Planken	MI09	Kasungu	MV02	Aliff
LS06	Ruggell	MI11	Lilongwe	MV20	Baa
LS07	Schaan	MI10	Machinga	MV17	Daalu
LS08	Schellenberg	MI12	Mangochi	MV14	Faafu
LS09	Triesen	MI13	Mchinji	MV27	Gaafu Aliff
LS10	Triesenberg	MI14	Mulanje	MV28	Gaafu Daalu
LS11	Vaduz	MI25	Mwanza	MV07	Haa Aliff
		MI15	Mzimba	MV23	Haa Daalu
LH	LITHUANIA	MI17	Nkhata Bay	MV26	Kaafu

MV05 Laamu	MR02 Hodh El Gharbi	MX15 Mexico
MV03 Laviyani	MR12 Inchiri	MX16 Michoacan de Ocampo
MV12 Meemu	MR09 Tagant	MX17 Morelos
MV29 Naviyani	MR11 Tiris Zemmour	MX18 Nayarit
MV25 Noonu	MR06 Trarza	MX19 Nuevo Leon
MV13 Raa		MX20 Oaxaca
MV01 Seenu	MP MAURITIUS	MX21 Puebla
MV24 Shaviyani	MP21 Agalega Islands	MX22 Queretaro de Arteaga
MV08 Thaa	MP12 Black River	MX23 Quintana Roo
MV04 Waavu	MP22 Cargados Carajos	MX24 San Luis Potosi
	MP13 Flacq	MX25 Sinaloa
ML MALI	MP14 Grand Port	MX26 Sonora
ML01 Bamako	MP15 Moka	MX27 Tabasco
ML02 Gao	MP16 Pamplemousses	MX28 Tamaulipas
ML03 Kayes	MP17 Plaines Wilhems	MX29 Tlaxcala
ML07 Koulikoro	MP18 Port Louis	MX30 Veracruz-Llave
ML04 Mopti	MP19 Riviere du Rempart	MX31 Yucatan
ML05 Segou	MP23 Rodrigues	MX32 Zacatecas
ML06 Sikasso	MP20 Savanne	
ML08 Tombouctou		
	MF MAYOTTE	MQ MIDWAY ISLANDS
MT MALTA		
	* MX MEXICO	MD MOLDOVA
IM MAN, ISLE OF	MX01 Aguascalientes	
	MX02 Baja California	MN MONACO
RM MARSHALL ISLANDS	MX03 Baja California Sur	MN01 La Condamine
	MX04 Campeche	MN02 Monaco
* MB MARTINIQUE	MX05 Chiapas	MN03 Monte-Carlo
	MX06 Chihuahua	
MR MAURITANIA	MX07 Coahuila de Zaragoza	MG MONGOLIA
MR07 Adrar	MX08 Colima	MG01 Arhangay
MR03 Assaba	MX09 Distrito Federal	MG02 Bayanhongor
MR05 Brakna	MX10 Durango	MG03 Bayan-Olgii
MR08 Dakhlet Nouadhibou	MX11 Guanajuato	MG21 Bulgan
MR04 Gorgol	MX12 Guerrero	MG05 Darhan
MR10 Guidimaka	MX13 Hidalgo	MG06 Dornod
MR01 Hodh Ech Chargui	MX14 Jalisco	MG07 Dornogovi
		MG08 Dundgovi

MG09 Dzavhan	MO34 Ifrane	WA NAMIBIA
MG22 Erdenet	MO15 Kenitra	WA01 Bethanien
MG10 Govi-Altay	MO16 Khemisset	WA03 Boesmanland
MG11 Hentiy	MO17 Khenifra	WA02 Caprivi Oos
MG12 Hovd	MO18 Khouribga	WA22 Damaraland
MG13 Hovsgol	MO35 Laayoune	WA04 Gobabis
MG14 Omnogovi	MO41 Larache	WA05 Grootfontein
MG15 Ovorhangay	MO19 Marrakech	WA23 Hereroland Oos
MG16 Selenge	MO20 Meknes	WA24 Hereroland Wes
MG17 Suhbaatar	MO21 Nador	WA06 Kaokoland
MG18 Tov	MO22 Ouarzazate	WA20 Karasburg
MG20 Ulaanbaatar	MO23 Oujda	WA07 Karibib
MG19 Uvs	MO24 Rabat-Sale	WA25 Kavango
	MO25 Safi	WA08 Keetmanshoop
MW MONTENEGRO	MO26 Settat	WA09 Luderitz
	MO38 Sidi Kacem	WA10 Maltahohe
MH MONTSERRAT	MO27 Tanger	WA26 Mariental
MH01 Saint Anthony	MO36 Tan-Tan	WA27 Namaland
MH02 Saint Georges	MO37 Taounate	WA11 Okahandja
MH03 Saint Peter	MO39 Taroudannt	WA12 Omaruru
	MO29 Tata	WA13 Otjiwarongo
MO MOROCCO	MO30 Taza	WA14 Outjo
MO01 Agadir	MO40 Tetouan	WA15 Owambo
MO02 Al Hoceima	MO32 Tiznit	WA16 Rehoboth
MO03 Azilal		WA17 Swakopmund
MO05 Beni Mellal	MZ MOZAMBIQUE	WA18 Tsumeb
MO04 Ben Slimane	MZ01 Cabo Delgado	WA21 Windhoek
MO06 Boulemane	MZ02 Gaza	
MO07 Casablanca	MZ03 Inhambane	NR00 NAURU
MO08 Chaouen	MZ10 Manica	NR01 Aiwo
MO09 El Jadida	MZ04 Maputo	NR02 Anabar
MO10 El Kelaa des Srarhna	MZ06 Nampula	NR03 Anetan
MO11 Er Rachidia	MZ07 Niassa	NR04 Anibare
MO12 Essaouira	MZ05 Sofala	NR05 Baiti
MO13 Fes	MZ08 Tete	NR06 Boe
MO14 Figuig	MZ09 Zambezia	NR07 Buada
MO33 Guelmim		NR08 Denigomodu

NR09 Ewa	NL10 Zeeland	NZ33 Hobson
NR10 Ijuw	NL13 Zuidelijke IJsselmeerpolders	NZ34 Hokianga
NR11 Meneng	NL11 Zuid-Holland	NZ35 Horowhenua
NR12 Nibok		NZD4 Hurunui
NR13 Uaboe		NZ36 Hutt
NR14 Yaren	NT NETHERLANDS ANTILLES	NZ37 Inangahua
		NZ38 Inglewood
BQ NAVASSA ISLAND	NC NEW CALEDONIA	NZ39 Kaikoura
		NZ40 Kairanga
NP NEPAL	* NZ NEW ZEALAND	NZ41 Kiwitea
NP01 Bagmati	NZ01 Akaroa	NZ43 Lake
NP02 Bheri	NZ03 Amuri	NZ45 Mackenzie
NP03 Dhawalagiri	NZ04 Ashburton	NZ46 Malvern
NP04 Gandaki	NZ07 Bay of Islands	NZE1 Manaia
NP05 Janakpur	NZ08 Bruce	NZ47 Manawatu
NP06 Karnali	NZ09 Buller	NZ48 Mangonui
NP07 Kosi	NZ10 Chatham Islands	NZ49 Maniototo
NP08 Lumbini	NZ11 Cheviot	NZ50 Marlborough
NP09 Mahakali	NZ12 Clifton	NZ51 Masterton
NP10 Mechi	NZ13 Clutha	NZ52 Matamata
NP11 Narayani	NZ14 Cook	NZ53 Mount Herbert
NP12 Rapti	NZ16 Dannevirke	NZ54 Ohinemuri
NP13 Sagarmatha	NZ17 Egmont	NZ55 Opotiki
NP14 Seti	NZ18 Eketahuna	NZ56 Oroua
	NZ19 Ellesmere	NZ57 Otamatea
* NL NETHERLANDS	NZ20 Eltham	NZ58 Otorohanga
NL01 Drenthe	NZ21 Eyre	NZ59 Oxford
NL12 Dronten	NZ22 Featherston	NZ60 Pahiatua
NL02 Friesland	NZ24 Franklin	NZ61 Paparua
NL03 Gelderland	NZ26 Golden Bay	NZ63 Patea
NL04 Groningen	NZ27 Great Barrier Island	NZ65 Piako
NL14 Lelystad	NZ28 Grey	NZ66 Pohangina
NL05 Limburg	NZ29 Hauraki Plains	NZ67 Raglan
NL06 Noord-Brabant	NZ30 Hawera	NZ68 Rangiora
NL07 Noord-Holland	NZ31 Hawke's Bay	NZ69 Rangitikei
NL08 Overijssel	NZ32 Heathcote	NZ70 Rodney
NL09 Utrecht	NZD9 Hikurangi	NZ71 Rotorua

NZE2	Runanga	NZB4	Whakatane	NI25	Anambra
NZE3	Saint Kilda	NZA1	Whangarei	NI06	Bauchi
NZD5	Silverpeaks	NZA2	Whangaroa	NI26	Benue
NZ72	Southland	NZA3	Woodville	NI27	Borno
NZ73	Stewart Island			NI22	Cross River
NZ74	Stratford	NU	NICARAGUA	NI36	Delta
NZD6	Strathallan	NU01	Boaco	NI37	Edo
NZ76	Taranaki	NU02	Carazo	NI38	Enugu
NZ77	Taumarunui	NU03	Chinandega	NI28	Imo
NZ78	Taupo	NU04	Chontales	NI39	Jigawa
NZ79	Tauranga	NU05	Esteli	NI23	Kaduna
NZE4	Thames-Coromandel	NU06	Granada	NI29	Kano
NZ81	Tuapeka	NU07	Jinotega	NI24	Katsina
NZ82	Vincent	NU08	Leon	NI40	Kebbi
NZ83	Waiapu	NU09	Madriz	NI41	Kogi
NZD8	Waiheke	NU10	Managua	NI30	Kwara
NZ84	Waihemo	NU11	Masaya	NI05	Lagos
NZ85	Waikato	NU12	Matagalpa	NI31	Niger
NZ86	Waikohu	NU13	Nueva Segovia	NI16	Ogun
NZ88	Waimairi	NU14	Rio San Juan	NI17	Ondo
NZ89	Waimarino	NU15	Rivas	NI42	Osun
NZ90	Waimate	NU16	Zelaya	NI32	Oyo
NZ91	Waimate West			NI19	Plateau
NZ92	Waimea	NG	NIGER	NI10	Rivers
NZ93	Waipa	NG01	Agadez	NI33	Sokoto
NZ95	Waipawa	NG02	Diffa	NI43	Taraba
NZ96	Waipukurau	NG03	Dosso	NI44	Yobe
NZ97	Wairarapa South	NG04	Maradi		
NZ98	Wairewa	NG05	Niamey	NE	NIUE
NZ99	Wairoa	NG06	Tahoua		
NZA4	Waitaki	NG07	Zinder	NF	NORFOLK ISLAND
NZA6	Waitomo				
NZA8	Waitotara	NI	NIGERIA	CQ	NORTHERN MARIANA ISLANDS
NZE6	Wallace	NI34	Abia		
NZB2	Wanganui	NI11	Abuja Capital Territory	* NO	NORWAY
NZE5	Waverley	NI35	Adamawa	NO01	Akershus
NZB3	Westland	NI21	Akwa Ibom	NO02	Aust-Agder

NO04 Buskerud	PM05 Darien	PA05 Caazapa
NO05 Finnmark	PM06 Herrera	PA19 Canindeyu
NO06 Hedmark	PM07 Los Santos	PA06 Central
NO07 Hordaland	PM08 Panama	PA20 Chaco
NO08 More og Romsdal	PM09 San Blas	PA07 Concepcion
NO09 Nordland	PM10 Veraguas	PA08 Cordillera
NO10 Nord-Trondelag		PA10 Guaira
NO11 Oppland	PP PAPUA NEW GUINEA	PA11 Itapua
NO12 Oslo	PP01 Central	PA12 Misiones
NO13 Ostfold	PP08 Chimbu	PA13 Neembucu
NO14 Rogaland	PP09 Eastern Highlands	PA21 Nueva Asuncion
NO15 Sogn og Fjordane	PP10 East New Britain	PA15 Paraguari
NO16 Sor-Trondelag	PP11 East Sepik	PA16 Presidente Hayes
NO17 Telemark	PP19 Enga	PA17 San Pedro
NO18 Troms	PP02 Gulf	
NO19 Vest-Agder	PP12 Madang	PE PERU
NO20 Vestfold	PP13 Manus	PE01 Amazonas
	PP03 Milne Bay	PE02 Ancash
MU OMAN	PP14 Morobe	PE03 Apurimac
	PP20 National Capital	PE04 Arequipa
PK PAKISTAN	PP15 New Ireland	PE05 Ayacucho
PK06 Azad Kashmir	PP04 Northern	PE06 Cajamarca
PK02 Balochistan	PP07 North Solomons	PE07 Callao
PK01 Federally Administered Tribal Areas	PP18 Sandaun	PE08 Cusco
PK08 Islamabad	PP05 Southern Highlands	PE09 Huancavelica
PK07 Northern Areas	PP06 Western	PE10 Huanuco
PK03 North-West Frontier	PP16 Western Highlands	PE11 Ica
PK04 Punjab	PP17 West New Britain	PE12 Junin
PK05 Sindh	PF PARACEL ISLANDS	PE13 La Libertad
		PE14 Lambayeque
LQ PALMYRA ATOLL		PE15 Lima
	PA PARAGUAY	PE16 Loreto
* PM PANAMA	PA18 Alto Paraguay	PE17 Madre de Dios
PM01 Bocas del Toro	PA01 Alto Parana	PE18 Moquegua
PM02 Chiriqui	PA02 Amambay	PE19 Pasco
PM03 Cocle	PA03 Boqueron	PE20 Piura
PM04 Colon	PA04 Caaguazu	PE21 Puno

PE22 San Martin	RP17 Camiguin	RPD5 Legaspi
PE23 Tacna	RPB5 Canlaon	RP37 Leyte
PE24 Tumbes	RP18 Capiz	RPD6 Lipa
PE25 Ucayali	RP19 Catanduanes	RPD7 Lucena
	RP20 Cavite	RP56 Maguindanao
RP PHILIPPINES	RPB6 Cavite City	RPD8 Mandaue
RP01 Abra	RP21 Cebu	RPD9 Manila
RP02 Agusan del Norte	RPB7 Cebu City	RPE1 Marawi
RP03 Agusan del Sur	RPB8 Cotabato	RP38 Marinduque
RP04 Aklan	RPB9 Dagupan	RP39 Masbate
RP05 Albay	RPC1 Danao	RP40 Mindoro Occidental
RPA1 Angeles	RPC2 Dapitan	RP41 Mindoro Oriental
RP06 Antique	RP24 Davao	RP42 Misamis Occidental
RPG8 Aurora	RPC3 Davao City	RP43 Misamis Oriental
RPA2 Bacolod	RP25 Davao del Sur	RP44 Mountain
RPA3 Bago	RP26 Davao Oriental	RPE2 Naga
RPA4 Baguio	RPC4 Dipolog	RPH3 Negros Occidental
RPA5 Bais	RPC5 Dumaguete	RP46 Negros Oriental
RP22 Basilan	RP23 Eastern Samar	RP57 North Cotabato
RPA6 Basilan City	RPC6 General Santos	RP67 Northern Samar
RP07 Bataan	RPC7 Gingoog	RP47 Nueva Ecija
RP08 Batanes	RP27 Ifugao	RP48 Nueva Vizcaya
RP09 Batangas	RPC8 Iligan	RPE3 Olongapo
RPA7 Batangas City	RP28 Ilocos Norte	RPE4 Ormoc
RP10 Benguet	RP29 Ilocos Sur	RPE5 Oroquieta
RP11 Bohol	RP30 Iloilo	RPE6 Ozamis
RP12 Bukidnon	RPC9 Iloilo City	RPE7 Pagadian
RP13 Bulacan	RPD1 Iriga	RP49 Palawan
RPA8 Butuan	RP31 Isabel	RPE8 Palayan
RPA9 Cabanatuan	RP32 Kalinga-Apayao	RP50 Pampanga
RPB1 Cadiz	RPD2 La Carlota	RP51 Pangasinan
RP14 Cagayan	RP33 Laguna	RPE9 Pasay
RPB2 Cagayan de Oro	RP34 Lanao del Norte	RPF1 Puerto Princesa
RPB3 Calbayog	RP35 Lanao del Sur	RPH2 Quezon
RPB4 Caloocan	RPD3 Laoag	RPF2 Quezon City
RP15 Camarines Norte	RPD4 Lapu-Lapu	RP68 Quirino
RP16 Camarines Sur	RP36 La Union	RP53 Rizal

RP54 Romblon	PL26 Bydgoszcz	PL63 Tarnobrzeg
RPF3 Roxas	PL27 Chelm	PL64 Tarnow
RP55 Samar	PL28 Ciechanow	PL65 Torun
RPF4 San Carlos, Negros Occidental	PL29 Czestochowa	PL66 Walbrzych
RPF5 San Carlos, Pangasinan	PL30 Elblag	PL67 Warszawa
RPF6 San Jose	PL31 Gdansk	PL68 Wloclawek
RPF7 San Pablo	PL32 Gorzow	PL69 Wroclaw
RPF8 Silay	PL33 Jelenia Gora	PL70 Zamosc
RP69 Siquijor	PL34 Kalisz	PL71 Zielona Gora
RP58 Sorsogon	PL35 Katowice	
RP70 South Cotabato	PL36 Kielce	PO PORTUGAL
RP59 Southern Leyte	PL37 Konin	PO02 Aveiro
RP71 Sultan Kudarat	PL38 Koszalin	PO23 Azores
RP60 Sulu	PL39 Krakow	PO03 Beja
RPF9 Surigao	PL40 Krosno	PO04 Braga
RP61 Surigao del Norte	PL41 Legnica	PO05 Braganca
RP62 Surigao del Sur	PL42 Leszno	PO06 Castelo Branco
RPG1 Tacloban	PL43 Lodz	PO07 Coimbra
RPG2 Tagaytay	PL44 Lomza	PO08 Evora
RPG3 Tagbilaran	PL45 Lublin	PO09 Faro
RPG4 Tangub	PL46 Nowy Sacz	PO11 Guarda
RP63 Tarlac	PL47 Olsztyn	PO13 Leiria
RP72 Tawitawi	PL48 Opole	PO14 Lisboa
RPG5 Toledo	PL49 Ostroleka	PO10 Madeira
RPG6 Trece Martires	PL50 Pila	PO16 Portalegre
RP64 Zambales	PL51 Piotrkow	PO17 Porto
RPG7 Zamboanga	PL52 Plock	PO18 Santarem
RP65 Zamboanga del Norte	PL53 Poznan	PO19 Setubal
RP66 Zamboanga del Sur	PL54 Przemysl	PO20 Viana do Castelo
	PL55 Radom	PO21 Vila Real
	PL56 Rzeszow	PO22 Viseu
PC PITCAIRN ISLANDS	PL57 Siedlce	
	PL58 Sieradz	RQ PUERTO RICO
* PL POLAND	PL59 Skierniewice	
PL23 Biala Podlaska	PL60 Slupsk	QA QATAR
PL24 Bialystok	PL61 Suwalki	
PL25 Bielsko	PL62 Szczecin	RE REUNION

RO ROMANIA	RO36 Timis	SC12 Saint Thomas Lowland
RO01 Alba	RO37 Tulcea	SC13 Saint Thomas Middle Island
RO02 Arad	RO38 Vaslui	SC15 Trinity Palmetto Point
RO03 Arges	RO39 Vilcea	
RO04 Bacau	RO40 Vrancea	
RO05 Bihor		
RO06 Bistrita-Nasaud	* RS RUSSIA	SH ST. HELENA
RO07 Botosani		SH01 Ascension
RO08 Braila	RW RWANDA	SH02 Saint Helena
RO09 Brasov	RW01 Butare	SH03 Tristan da Cunha
RO10 Bucuresti	RW02 Byumba	
RO11 Buzau	RW03 Cyangugu	ST ST. LUCIA
RO41 Calarasi	RW04 Gikongoro	ST01 Anse-la-Raye
RO12 Caras-Severin	RW05 Gisenyi	ST03 Castries
RO13 Cluj	RW06 Gitarama	ST04 Choiseul
RO14 Constanta	RW07 Kibungo	ST02 Dauphin
RO15 Covasna	RW08 Kibuye	ST05 Dennery
RO16 Dimbovita	RW09 Kigali	ST06 Gros-Islet
RO17 Dolj	RW10 Ruhengeri	ST07 Laborie
RO18 Galati		ST08 Micoud
RO19 Gorj	SC ST. KITTS AND NEVIS	ST11 Praslin
RO42 Giurgiu	SC01 Christ Church Nichola Town	ST09 Soufriere
RO20 Harghita	SC02 Saint Anne Sandy Point	ST10 Vieux-Fort
RO21 Hunedoara	SC03 Saint George Basseterre	SB ST. PIERRE AND MIQUELON
RO22 Ialomita	SC04 Saint George Gingerland	
RO23 Iasi	SC05 Saint James Windward	VC ST. VINCENT AND THE GRENADINES
RO25 Maramures	SC06 Saint John Capisterre	VC01 Charlotte
RO26 Mehedinti	SC07 Saint John Figtree	VC06 Grenadines
RO27 Mures	SC08 Saint Mary Cayon	VC02 Saint Andrew
RO28 Neamt	SC09 Saint Paul Capisterre	VC03 Saint David
RO29 Olt	SC10 Saint Paul Charlestown	VC04 Saint George
RO30 Prahova	SC11 Saint Peter Basseterre	VC05 Saint Patrick
RO31 Salaj		
RO32 Satu Mare		
RO33 Sibiu		
RO34 Suceava		SM SAN MARINO
RO35 Teleorman		SM01 Acquaviva
		SM06 Borgo Maggiore

SM02 Chiesanuova	SG05 Tambacounda	SN SINGAPORE
SM03 Domagnano	SG07 Thies	
SM04 Faetano	SG12 Ziguinchor	* LO SLOVAKIA
SM05 Fiorentino		
SM08 Monte Giardino	SR SERBIA	* SI SLOVENIA
SM07 San Marino		
SM09 Serravalle	SE SEYCHELLES	BP SOLOMON ISLANDS
	SE01 Anse aux Pins	BP05 Central
TP SAO TOME AND PRINCIPE	SE02 Anse Boileau	BP06 Guadalcanal
TP01 Principe	SE03 Anse Etoile	BP07 Isabel
TP02 Sao Tome	SE04 Anse Louis	BP08 Makira
	SE05 Anse Royale	BP03 Malaita
SA SAUDI ARABIA	SE06 Baie Lazare	BP09 Temotu
SA02 Al Bahah	SE07 Baie Sainte Anne	BP04 Western
SA15 Al Hudud ash Shamaliyah	SE08 Beau Vallon	
SA03 Al Jawf	SE09 Bel Air	SO SOMALIA
SA05 Al Madinah	SE10 Bel Ombre	SO01 Bakool
SA08 Al Qasim	SE11 Cascade	SO02 Banaadir
SA09 Al Qurayyat	SE12 Glacis	SO03 Bari
SA10 Ar Riyad	SE13 Grand' Anse (Mahe)	SO04 Bay
SA06 Ash Sharqiyah	SE14 Grand' Anse (Praslin)	SO05 Galguduud
SA11 `Asir	SE15 La Digue	SO06 Gedo
SA13 Ha'il	SE16 La Riviere Anglaise	SO07 Hiiraan
SA17 Jizan	SE17 Mont Buxton	SO08 Jubbada Dhexe
SA14 Makkah	SE18 Mont Fleuri	SO09 Jubbada Hoose
SA16 Najran	SE19 Plaisance	SO10 Mudug
SA19 Tabuk	SE20 Pointe La Rue	SO11 Nugaal
	SE21 Port Glaud	SO12 Sanaag
SG SENEGAL	SE22 Saint Louis	SO13 Shabeellaha Dhexe
SG01 Dakar	SE23 Takamaka	SO14 Shabeellaha Hoose
SG03 Diourbel	SL SIERRA LEONE	SO15 Togdheer
SG09 Fatick	SL01 Eastern	SO16 Woqooyi Galbeed
SG10 Kaolack	SL02 Northern	SF SOUTH AFRICA
SG11 Kolda	SL03 Southern	SF01 Cape Province
SG08 Louga	SL04 Western Area	SF02 Natal
SG04 Saint-Louis		SF03 Orange Free State

SF04 Transvaal	CE10 Kandy	SV SVALBARD
	CE11 Kegalla	
SX SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	CE12 Kurunegala	WZ SWAZILAND
	CE26 Mannar	WZ01 Hhohho
	CE14 Matale	WZ02 Lubombo
* SP SPAIN	CE15 Matara	WZ03 Manzini
SP51 Andalucia	CE16 Moneragala	WZ05 Praslin
SP52 Aragon	CE27 Mullaittivu	WZ04 Shiselweni
SP34 Asturias	CE17 Nuwara Eliya	
SP53 Canarias	CE18 Polonnaruwa	* SW SWEDEN
SP39 Cantabria	CE19 Puttalam	SW01 Alvsborgs Lan
SP54 Castilla-La Mancha	CE20 Ratnapura	SW02 Blekinge Lan
SP55 Castilla y Leon	CE21 Trincomalee	SW03 Gavleborgs Lan
SP56 Cataluna	CE28 Vavuniya	SW04 Goteborgs och Bohus Lan
SP57 Extremadura		SW05 Gotlands Lan
SP58 Galicia	SU SUDAN	SW06 Hallands Lan
SP07 Islas Baleares	SU26 A`ali an Nil	SW07 Jamtlands Lan
SP27 La Rioja	SU28 Al Istiwa'iyah	SW08 Jonkopings Lan
SP29 Madrid	SU29 Al Khartum	SW09 Kalmar Lan
SP31 Murcia	SU27 Al Wusta	SW10 Kopparbergs Lan
SP32 Navarra	SU30 Ash Shamaliyah	SW11 Kristianstads Lan
SP59 Pais Vasco	SU31 Ash Sharqiyah	SW12 Kronobergs Lan
SP60 Valenciana	SU32 Bahr al Ghazal	SW13 Malmohus Lan
	SU33 Darfur	SW14 Norrbottens Lan
PG SPRATLY ISLANDS	SU34 Kurdufan	SW15 Orebro Lan
		SW16 Ostergotlands Lan
CE SRI LANKA	NS SURINAME	SW17 Skaraborgs Lan
CE01 Amparai	NS10 Brokopondo	SW18 Sodermanlands Lan
CE02 Anuradhapura	NS11 Commewijne	SW26 Stockholms Lan
CE03 Badulla	NS12 Coronie	SW21 Uppsala Lan
CE04 Batticaloa	NS13 Marowijne	SW22 Varmlands Lan
CE23 Colombo	NS14 Nickerie	SW23 Vasterbottens Lan
CE06 Galle	NS15 Para	SW24 Vasternorrlands Lan
CE24 Gampaha	NS16 Paramaribo	SW25 Vastmanlands Lan
CE07 Hambantota	NS17 Saramacca	
CE25 Jaffna	NS18 Sipaliwini	* SZ SWITZERLAND
CE09 Kalutara	NS19 Wanica	SZ01 Aargau

SZ02 Ausser-Rhoden	SY11 Hims	TH44 Chachoengsao
SZ03 Basel-Landschaft	SY12 Idlib	TH32 Chai Nat
SZ04 Basel-Stadt	SY08 Rif Dimashq	TH26 Chaiphaphum
SZ05 Bern	SY14 Tartus	TH48 Chanthaburi
SZ06 Fribourg		TH02 Chiang Mai
SZ07 Geneve	TI TAJIKISTAN	TH03 Chiang Rai
SZ08 Glarus		TH46 Chon Buri
SZ09 Graubunden	TZ TANZANIA	TH58 Chumphon
SZ10 Inner-Rhoden	TZ01 Arusha	TH23 Kalasin
SZ26 Jura	TZ23 Dar es Salaam	TH11 Kamphaeng Phet
SZ11 Luzern	TZ03 Dodoma	TH50 Kanchanaburi
SZ12 Neuchatel	TZ04 Iringa	TH22 Khon Kaen
SZ13 Nidwalden	TZ05 Kigoma	TH63 Krabi
SZ14 Obwalden	TZ06 Kilimanjaro	TH40 Krung Thep
SZ15 Sankt Gallen	TZ07 Lindi	TH06 Lampang
SZ16 Schaffhausen	TZ08 Mara	TH05 Lamphun
SZ17 Schwyz	TZ09 Mbeya	TH18 Loei
SZ18 Solothurn	TZ10 Morogoro	TH34 Lop Buri
SZ19 Thurgau	TZ11 Mtwara	TH01 Mae Hong Son
SZ20 Ticino	TZ12 Mwanza	TH24 Maha Sarakham
SZ21 Uri	TZ13 Pemba North	TH43 Nakhon Nayok
SZ22 Valais	TZ20 Pemba South	TH53 Nakhon Pathom
SZ23 Vaud	TZ02 Pwani	TH21 Nakhon Phanom
SZ24 Zug	TZ24 Rukwa	TH27 Nakhon Ratchasima
SZ25 Zurich	TZ14 Ruvuma	TH16 Nakhon Sawan
	TZ15 Shinyanga	TH64 Nakhon Si Thammarat
SY SYRIA	TZ16 Singida	TH04 Nan
SY01 Al Hasakah	TZ17 Tabora	TH31 Narathiwat
SY02 Al Ladhiqiyah	TZ18 Tanga	TH17 Nong Khai
SY03 Al Qunaytirah	TZ21 Zanzibar	TH38 Nonthaburi
SY04 Ar Raqqa	Central/South	TH39 Pathum Thani
SY05 As Suwayda'	TZ22 Zanzibar North	TH69 Pattani
SY06 Dar`a	TZ25 Zanzibar Urban/West	TH61 Phangnga
SY07 Dayr az Zawr	TZ19 Ziwa Magharibi	TH66 Phatthalung
SY13 Dimashq		TH41 Phayao
SY09 Halab	TH THAILAND	TH14 Phetchabun
SY10 Hamah	TH35 Ang Thong	TH56 Phetchaburi
	TH28 Buriram	

TH13 Phichit	TO03 Atakpame	TD10 San Fernando
TH12 Phitsanulok	TO15 Badou	TD11 Tobago
TH36 Phra Nakhon Si Ayutthaya	TO04 Bafilo	TD12 Victoria
TH07 Phrae	TO05 Bassar	TE TROMELIN ISLAND
TH62 Phuket	TO06 Dapaong	
TH45 Prachin Buri	TO07 Kante	PS TRUST TERRITORY OF THE PACIFIC ISLANDS (PALAU)
TH57 Prachuap Khiri Khan	TO08 Klouto	
TH59 Ranong	TO14 Kpagouda	
TH52 Ratchaburi	TO09 Lama-Kara	TS TUNISIA
TH47 Rayong	TO10 Lome	TS14 Al Kaf
TH25 Roi Et	TO11 Mango	TS15 Al Mahdiyah
TH20 Sakon Nakhon	TO12 Niamtougou	TS16 Al Munastir
TH42 Samut Prakan	TO13 Notse	TS02 Al Qasrayn
TH55 Samut Sakhon	TO16 Sotouboua	TS03 Al Qayrawan
TH54 Samut Songkhram	TO17 Tabligbo	TS26 Aryanah
TH37 Saraburi	TO19 Tchamba	TS17 Bajah
TH67 Satun	TO20 Tchaoudjo	TS18 Banzart
TH33 Sing Buri	TO18 Tsevie	TS27 Bin `Arus
TH30 Sisaket	TO21 Vogan	TS06 Jundubah
TH68 Songkhla		TS28 Madanin
TH09 Sukhothai	TL TOKELAU	TS19 Nabul
TH51 Suphan Buri		TS29 Qabis
TH60 Surat Thani	TN TONGA	TS10 Qafsah
TH29 Surin	TN01 Ha`apai	TS31 Qibili
TH08 Tak	TN02 Tongatapu	TS32 Safaqis
TH65 Trang	TN03 Vava`u	TS33 Sidi Bu Zayd
TH49 Trat		TS22 Silyanah
TH71 Ubon Ratchathani	TD TRINIDAD AND TOBAGO	TS23 Susah
TH19 Udon Thani	TD01 Arima	TS34 Tatawin
TH15 Uthai Thani	TD02 Caroni	TS35 Tawzar
TH10 Uttaradit	TD03 Mayaro	TS36 Tunis
TH70 Yala	TD04 Nariva	TS37 Zaghwan
TH72 Yasothon	TD05 Port-of-Spain	
	TD06 Saint Andrew	TU TURKEY
TO TOGO	TD07 Saint David	TU01 Adana
TO01 Amlame	TD08 Saint George	TU02 Adiyaman
TO02 Aneho	TD09 Saint Patrick	TU03 Afyon

TU04	Agri	TU36	Kars	
TU75	Aksaray	TU37	Kastamonu	TV TUVALU
TU05	Amasya	TU38	Kayseri	
TU68	Ankara	TU79	Kirikkale	UG UGANDA
TU07	Antalya	TU39	Kirklareli	UG05 Busoga
TU08	Artvin	TU40	Kirsehir	UG18 Central
TU09	Aydin	TU41	Kocaeli	UG20 Eastern
TU10	Balikesir	TU71	Konya	UG08 Karamoja
TU76	Batman	TU43	Kutahya	UG21 Nile
TU77	Bayburt	TU44	Malatya	UG22 North Buganda
TU11	Bilecik	TU45	Manisa	UG23 Northern
TU12	Bingol	TU72	Mardin	UG12 South Buganda
TU13	Bitlis	TU48	Mugla	UG24 Southern
TU14	Bolu	TU49	Mus	UG25 Western
TU15	Burdur	TU50	Nevsehir	
TU16	Bursa	TU73	Nigde	* UP UKRAINE
TU17	Canakkale	TU52	Ordu	UP01 Cherkas'ka Oblast'
TU18	Cankiri	TU53	Rize	UP02 Chernihivs'ka Oblast'
TU19	Corum	TU54	Sakarya	UP03 Chernivets'ka Oblast'
TU20	Denizli	TU55	Samsun	UP04 Dnipropetrovs'ka Oblast'
TU21	Diyarbakir	TU74	Siirt	UP05 Donets'ka Oblast'
TU22	Edirne	TU57	Sinop	UP06 Ivano-Frankivs'ka Oblast'
TU23	Elazig	TU80	Sirnak	UP07 Kharkivs'ka Oblast'
TU24	Erzincan	TU58	Sivas	UP08 Khersons'ka Oblast'
TU25	Erzurum	TU59	Tekirdag	UP09 Khmel'nyts'ka Oblast'
TU26	Eskisehir	TU60	Tokat	UP10 Kirovohrads'ka Oblast'
TU27	Gaziantep	TU61	Trabzon	UP11 Krym, Respublika
TU28	Giresun	TU62	Tunceli	UP12 Kyyiv, Misto
TU69	Gumushane	TU63	Urfa	UP13 Kyyivs'ka Oblast'
TU70	Hakkari	TU64	Usak	UP14 Luhans'ka Oblast'
TU31	Hatay	TU65	Van	UP15 L'vivs'ka Oblast'
TU32	Icel	TU66	Yozgat	UP16 Mykolayivs'ka Oblast'
TU33	Isparta	TU67	Zonguldak	UP17 Odes'ka Oblast'
TU34	Istanbul			UP18 Poltavs'ka Oblast'
TU35	Izmir	TX	TURKMENISTAN	UP19 Rivnens'ka Oblast'
TU46	Kahraman Maras			UP20 Sevastopol', Misto
TU78	Karaman	TK	TURKS AND CAICOS ISLANDS	

UP21 Sums'ka Oblast'	UK20 Hereford and Worcester	UK62 Cookstown
UP22 Ternopil's'ka Oblast'	UK21 Hertford	UK63 Craigavon
UP23 Vinnyts'ka Oblast'	UK22 Humberside	UK64 Down
UP24 Volyns'ka Oblast'	UK23 Isle of Wight	UK65 Dungannon
UP25 Zakarpats'ka Oblast'	UK24 Kent	UK66 Fermanagh
UP26 Zaporiz'ka Oblast'	UK25 Lancashire	UK67 Larne
UP27 Zhytomyrs'ka Oblast'	UK26 Leicester	UK68 Limavady
	UK27 Lincoln	UK69 Lisburn
TC UNITED ARAB EMIRATES	UK28 Merseyside	UK70 Londonderry
TC01 Abu Zaby	UK29 Norfolk	UK71 Magherafelt
TC02 `Ajman	UK31 Northampton	UK72 Moyle
TC04 Al Fujayrah	UK32 Northumberland	UK73 Newry and Mourne
TC06 Ash Shariqah	UK30 North Yorkshire	UK74 Newtownabbey
TC03 Dubayy	UK33 Nottingham	UK75 North Down
TC05 Ra's al Khaymah	UK34 Oxford	UK76 Omagh
TC07 Umm al Qaywayn	UK35 Shropshire	UK77 Strabane
	UK36 Somerset	UK78 Borders
* UK UNITED KINGDOM	UK37 South Yorkshire	UK79 Central
UK01 Avon	UK38 Stafford	UK80 Dumfries and Galloway
UK02 Bedford	UK39 Suffolk	UK81 Fife
UK03 Berkshire	UK40 Surrey	UK82 Grampian
UK04 Buckingham	UK41 Tyne and Wear	UK83 Highland
UK05 Cambridge	UK42 Warwick	UK84 Lothian
UK06 Cheshire	UK43 West Midlands	UK85 Orkney
UK07 Cleveland	UK44 West Sussex	UK86 Shetland
UK08 Cornwall	UK45 West Yorkshire	UK87 Strathclyde
UK09 Cumbria	UK46 Wiltshire	UK88 Tayside
UK10 Derby	UK52 Antrim	UK89 Western Isles
UK11 Devon	UK53 Ards	UK90 Clwyd
UK12 Dorset	UK54 Armagh	UK91 Dyfed
UK13 Durham	UK55 Ballymena	UK92 Gwent
UK14 East Sussex	UK56 Ballymoney	UK93 Gwynedd
UK15 Essex	UK57 Banbridge	UK94 Mid Glamorgan
UK16 Gloucester	UK58 Belfast	UK95 Powys
UK17 Greater London	UK59 Carrickfergus	UK96 South Glamorgan
UK18 Greater Manchester	UK60 Castlereagh	UK97 West Glamorgan
UK19 Hampshire	UK61 Coleraine	

* US UNITED STATES
 * US01 Alabama
 * US02 Alaska
 * US04 Arizona
 * US05 Arkansas
 * US06 California
 * US08 Colorado
 * US09 Connecticut
 * US10 Delaware
 * US11 District of Columbia
 * US12 Florida
 * US13 Georgia
 * US15 Hawaii
 * US16 Idaho
 * US17 Illinois
 * US18 Indiana
 * US19 Iowa
 * US20 Kansas
 * US21 Kentucky
 * US22 Louisiana
 * US23 Maine
 * US24 Maryland
 * US25 Massachusetts
 * US26 Michigan
 * US27 Minnesota
 * US28 Mississippi
 * US29 Missouri
 * US30 Montana
 * US31 Nebraska
 * US32 Nevada
 * US33 New Hampshire
 * US34 New Jersey
 * US35 New Mexico
 * US36 New York
 * US37 North Carolina
 * US38 North Dakota
 * US39 Ohio

* US40 Oklahoma
 * US41 Oregon
 * US42 Pennsylvania
 * US44 Rhode Island
 * US45 South Carolina
 * US46 South Dakota
 * US47 Tennessee
 * US48 Texas
 * US49 Utah
 * US50 Vermont
 * US51 Virginia
 * US53 Washington
 * US54 West Virginia
 * US55 Wisconsin
 * US56 Wyoming

UY URUGUAY

UY01 Artigas
 UY02 Canelones
 UY03 Cerro Largo
 UY04 Colonia
 UY05 Durazno
 UY06 Flores
 UY07 Florida
 UY08 Lavalleja
 UY09 Maldonado
 UY10 Montevideo
 UY11 Paysandu
 UY12 Rio Negro
 UY13 Rivera
 UY14 Rocha
 UY15 Salto
 UY16 San Jose
 UY17 Soriano
 UY18 Tacuarembó
 UY19 Treinta y Tres

UZ UZBEKISTAN

NH VANUATU
 NH05 Ambrym
 NH06 Aoba/Maewo
 NH07 Banks/Torres
 NH08 Efate
 NH09 Epi
 NH10 Malakula
 NH11 Paama
 NH12 Pentecote
 NH13 Santo/Malo
 NH14 Shepherd
 NH15 Tafea

VT VATICAN CITY

VE VENEZUELA

VE01 Amazonas
 VE02 Anzoategui
 VE03 Apure
 VE04 Aragua
 VE05 Barinas
 VE06 Bolivar
 VE07 Carabobo
 VE08 Cojedes
 VE09 Delta Amacuro
 VE24 Dependencias Federales
 VE10 Distrito Federal
 VE11 Falcon
 VE12 Guarico
 VE13 Lara
 VE14 Merida
 VE15 Miranda
 VE16 Monagas
 VE17 Nueva Esparta
 VE18 Portuguesa

VE19	Sucre	VM65	Nam Ha	WS03	Atua
VE20	Tachira	VM66	Nghe An	WS04	Fa`asaleleaga
VE21	Trujillo	VM67	Ninh Binh	WS05	Gaga`emauga
VE22	Yaracuy	VM68	Ninh Thuan	WS07	Gagaifomauga
VE23	Zulia	VM69	Phu Yen	WS08	Palauli
		VM70	Quang Binh	WS09	Satupa`itea
VM	VIETNAM	VM29	Quang Nam-Da Nang	WS10	Tuamasaga
VM43	An Giang	VM71	Quang Ngai	WS06	Va`a-o-Fonoti
VM53	Ba Ria-Vung Tau	VM30	Quang Ninh	WS11	Vaisigano
VM02	Bac Thai	VM72	Quang Tri		
VM03	Ben Tre	VM73	Soc Trang	YM	YEMEN
VM54	Binh Dinh	VM49	Song Be	YM01	Abyan
VM55	Binh Thuan	VM32	Son La	YM02	`Adan
VM56	Can Tho	VM33	Tay Ninh	YM07	Al Bayda'
VM05	Cao Bang	VM35	Thai Binh	YM08	Al Hudaydah
VM44	Dac Lac	VM34	Thanh Hoa	YM09	Al Jawf
VM45	Dong Nai	VM74	Thua Thien	YM03	Al Mahrah
VM46	Dong Thap	VM37	Tien Giang	YM10	Al Mahwit
VM57	Gia Lai	VM75	Tra Vinh	YM11	Dhamar
VM11	Ha Bac	VM76	Tuyen Quang	YM04	Hadramawt
VM58	Ha Giang	VM77	Vinh Long	YM12	Hajjah
VM51	Ha Noi	VM50	Vinh Phu	YM13	Ibb
VM59	Ha Tay	VM78	Yen Bai	YM06	Lahij
VM60	Ha Tinh			YM14	Ma`rib
VM12	Hai Hung	* VQ	VIRGIN ISLANDS	YM05	Shabwah
VM13	Hai Phong			YM15	Sa`dah
VM52	Ho Chi Minh	WQ	WAKE ISLAND	YM16	San`a'
VM61	Hoa Binh			YM17	Ta`izz
VM62	Khanh Hoa	WF	WALLIS AND FUTUNA		
VM47	Kien Giang			CG	ZAIRE
VM63	Kon Tum	WE	WEST BANK	CG01	Bandundu
VM22	Lai Chau			CG08	Bas-Zaire
VM23	Lam Dong	WI	WESTERN SAHARA	CG02	Equateur
VM39	Lang Son			CG09	Haut-Zaire
VM64	Lao Cai	WS	WESTERN SAMOA	CG03	Kasai-Occidental
VM24	Long An	WS01	A`ana	CG04	Kasai-Oriental
VM48	Minh Hai	WS02	Aiga-i-le-Tai	CG06	Kinshasa

CG07 Kivu
CG05 Shaba

G1ZA ZAMBIA
ZA02 Central
ZA08 Copperbelt
ZA03 Eastern
ZA04 Luapula
ZA09 Lusaka
ZA05 Northern
ZA06 North-Western
ZA07 Southern
ZA01 Western

ZI ZIMBABWE
ZI01 Manicaland
ZI03 Mashonaland Central
ZI04 Mashonaland East
ZI05 Mashonaland West
ZI06 Matabeleland North
ZI07 Matabeleland South
ZI02 Midlands
ZI08 Masvingo

TW TAIWAN
TW01 Fu-chien
TW02 Kao-hsiung
TW03 T'ai-pei
TW04 T'ai-wan

Appendix CC. ACQUIRE Field Name Codes

<u>Field Name</u>	<u>Remark Abbreviation</u>	<u>Field Name</u>	<u>Remark Abbreviation</u>
Grade	GRADE	Exposure Type	TYPE
Purity	PURITY	Method Conc	CONC
Formulation	FO	Temperature	TEMP
Characteristics	CHAR	Hardness	HARD
Radiolabel	RADIO	Alkalinity	ALK
Carrier or Solvent	CARRIER	Dissolved Oxygen	DO
Solvent Grade	SOLVGRADE	pH	PH
Solvent Purity	SOLVPURITY	Salinity	SALIN
Solvent Formulation	SOLVFO	Conductivity	COND
Solvent Characteristics	SOLVCHAR	Organic C	ORG C
Media	FW,SW	Habitat Descr	HAB
Location	LAB,FIELD	Substrate Info	SUBSTR
Organism Char	LIFESTG	Water Depth	DEPTH
Control	CONTR	Location	LOC
Response Site	SITE	Sta/Pro/Country	NONE
Effect	In EE Remark	Latitude	LAT
Trend	TREND	Longitude	LONG
Endpt	In EE Remark	AP Type	AP TY
Measurement	In EE Remark	AP Frequency	AP FREQ
Signif	SIGNIF	AP Rate	AP RATE
Level	LEVEL	Half Life	HALF
Concentration	CONC	AP Season	AP SEAS
BCF	BCF	AP Date	AP DATE
Exposure Time	TIME		

Appendix DD. Terretox Field Name Codes**I. Quality Assurance Parameters**

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Reference Number	REF #, AUTHOR, YEAR	none
Total Tests	TOTAL TESTS	none
Reviewer/Date	REVIEWER, DATE	none
QA Date/Initials	QA DATE, INITIALS	none
TestNumber	TEST ID	none

II. Test Chemical Parameters

Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Chemical Name, Type	TEST, POSITIVE CONTROL, CARRIER	none, PC CARRIER
Grade	GRADE	GRADE
Purity	PURITY	none
Formulation	FORMULATION	FO
Comments	CHARACTERSTICS	CHAR
Radiolabel	RADIOLAB	RADIO
CAS number	CAS #	none

III. Test Information

Field Name	Coding Sheet Abbreviation	Remarks Abbreviations
Species Number/Latin Name	SPECIES #/LATIN NAME	none
Organism Source	ORG SOURCE	SOURCE
Lifestage/Age	LIFESTG/AGE	LIFESTG/ AGE
Organism Characteristics	ORG CHAR	OCHAR
Test Location	TEST LOCATION	LOC
Exposure Type	EXPO TYPE	TYPE
Control	CONTROL TYPE	CONTR
Number of Doses	DOSE NUM	DNUM
Application Frequency	APPL FREQUENCY	AP FREQ
Exposure Duration	EXPOSURE DURATION	ETIME
Study Duration	STUDY DURATION	STIME
Media Type	MEDIA TYPE	MEDIA
Soil Type	SOIL TYPE	SOIL
Soil Texture	SOIL TEXTURE	TEXTURE
Media pH	MEDIA PH	pH
Media Organic Matter	MEDIA ORGANIC MATTER	OM
Media Moisture	MEDIA MOISTURE	MOIST
Media CEC	MEDIA CEC	CEC
Soil Concentration Measured/ Concentration measured on Dry or Wet Basis	SOIL CONC MEASURED DRY-WET WEIGHT	none
Remarks	REMARKS	none
Experimental Design	---	EDES
Other Effects	none	OEF

IV. Exposure Information

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Dose Number	DOSE NO	none
Dose ID	DOSE ID	none
Sample Number	N	none
Gender	SEX	SEX
Exposure Dose and Unit	DOSE/UNIT	DOSE/ DUNIT
Ion	ION	ION
Chemical Analysis Method	METHOD	ANALYSIS
Remark Number	RN	none
Remarks	REMARKS	none

V. Results Information

Field Name	Coding Sheet Abbreviation	Remarks Abbreviation
Dose Number/ID	DOSE NO/ID	none
Sample Number and Unit	N/UNIT	SAMPN/ NUNIT
Observation Time	O	OTIME
Effect	EFFECT	EFCT
Effect Measurement	MEASMENT	MSMT
Endpoint/Assigned	ENDPT/ASG	ENDPT
Result Set	R	none
Statistical Significance	SIG/NSIG	SIGNIF
Level	LEVEL	none
Paper/Reviewer Assigned Data	P R	none
Response Site	RESP SITE	RSITE
Observed Response Value/ Unit	OBSERV RESPONSE VALUE/UNIT	RVALUE RUNIT
Dry or Wet Weight	DW %	DW
Percent Lipid	%LIPID	LD
Remark Number	RN	none
Remarks	REMARKS	none

Appendix EE. Organic Matter Type and Units

Organic Matter Types

Code	Definition
ASH	Ash Free Dry Mass
C	Carbon
C:N	Carbon to Nitrogen Ratio
CPON	Carbon Particulate Organic Matter
Cox	Oxidized Carbon
DOC	Dissolved Organic Carbon
HUM	Humus
LOI	Loss On Ignition
N	Nitrogen
NR	Not Reported
OC	Organic Carbon
OM	Organic Matter
POC	Particulate Organic Carbon
POM	Particulate Organic Matter
TOC	Total Organic Carbon
peat	Peat

Organic Matter Units

Code	Definition
%	percent
NR	not reported
cmol/kg	centimoles per kilogram
g	grams
g/100g	grams per 100 grams
g/kg	grams per kilogram
mg/g soil	milligrams per gram soil
mg/100g soil	milligrams per 100 grams of soil
mg/kg soil	milligrams per kilogram soil
uM	microMolar
umol/g LIT	micromoles per gram litter

Appendix FF. Cation Exchange Capacity Units

Dose	Definition
NR	not reported
cmol/kg	centimoles per kilogram soil
cmol+/kg	centimoles + ions per kilogram soil
cmol P+/kg	centimoles P+ per kilogram soil
me/100g	milliequivalents per 100 grams s
meq	milliequivalents
meq A/100 g	milliequivalents NH ₄ per 100 g
meq mg/g	milliequivalent milligrams per g
meq/100g	milliequivalents per 100 grams s
meq/kg	milliequivalents per kilogram
mmol/100g	millimoles per 100 grams soil
mmol/kg	millimoles per kilogram soil
mmol K+/kg	millimoles K+ per kilogram soil
mval/100g	millivalue per 100 grams (mval=ppm*(ion charge)/(atomic weight))

Appendix GG. AQUIRE Concentration Types

Code	Description	Definition
Organic		
A	Active ingredient	Chemical substance in a product that is responsible for the pesticidal (toxic) effect (Ware, 1978). Reported as "A" when the author refers to the concentration as active ingredient, active principle or various grades of reagents (ie., Analytical, Reagent or Technical). When coding, a value in the publication may be reported as "Al kg/ha" or "kg Al/ha"; in AQUIRE this type of value is reported as 'A =' for <u>CONC TYPE</u> , with units as kg/ha. For example, 100 kg Al/ha is reported as A = 100 kg/ha.
F	Formulation	Way in which basic pesticide (toxicant) is prepared for practical use (Ware, 1978). Generally reserved for commercial preparation prior to actual use and does not include the final dilution (Insect-Pest Management and Control, 1971) (e.g.; Baythroid, 2,4-D). Also included in this category are organic compounds with no pesticidal activity (e.g.; PCB, dioxin).
Metal/Organometals		
D	Dissolved	Those constituents of an unacidified sample that pass through a 0.45 um membrane filter (e.g. soluble metal) (APHA et.al. 1992).
L	Labile	The labile or free ion metal concentration determined by various analytical methods. When coding, the specific labile forms or complexes are not differentiated
T	Total	The concentration of metals determined on an unfiltered sample after vigorous digestion, or the sum of the concentrations of metals in both dissolved and suspended fractions (APHA et.al. 1992). Heavy metals and single elements (e.g. Na, Cl, Br) are coded as T.
Code	Description	Definition
Inorganic non-metals		
T	Total	The dissociated, charged form of nitrogen or hydrogen related chemicals. This can take on numerous forms, e.g.; ammonium (NH ₄), nitrite (NO ₂), etc. (Rand and Petrocelli, 1985).T is the default for publications that do not state whether Total or Unionized concentrations are reported.

U	Unionized	The undissociated, uncharged form of ammonia or hydrogen sulfide. The ammonia molecule, NH_3 , is the unionized form. (In aqueous solution, ammonia assumes an equilibrium between NH_3 and NH_4^+ .) The NH_3 is the toxic entity of the ammonia compound (Rand and Petrocelli, 1985).
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